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ADDRESS.

THE PROGRESS AND RESULTS OF PATHOLOGIC WORK.

An address delivered at the opening of the Section of Pathology, at the Sixty-fifth Annual Meeting of the British Medical Association, Montreal, Aug. 31 to Sept. 4, 1897.

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[Abstract from advance sheets of the British Medical Journal.]

To trace the history of pathology during the last sixty years would be to follow the science practically from its commencement and to go back to a state of matters which it is almost impossible for us now to realize. Even going back twenty-five years, the changes which have taken place are enormous. At that time the lectures on pathology consisted practically entirely of morbid anatomy—long descriptions, for the most part very accurate and not materially different at the present day, were given of the naked-eye appearances of the diseased parts, but as to how or why these changes were brought about hardly any reference was made. Indeed, very little was known, and when an explanation was attempted it was generally of a mechanical or physical character. At the present time, while of course the changes which take place in disease must be known, the study of pathology is especially directed to the discovery of the mode in which these changes occur and the reasons why they appear. Today it is the etiologic side of pathology which occupies our attention, and deservedly so, for, so far as practical results in the treatment of disease are concerned, the knowledge of the changes produced is of comparatively minor importance as compared with that of the reason why they are set up and how they take place.

The most striking and important advance has been the growth of the great science of bacteriology. Twenty-five years ago bacteriology as a science was non-existent. So far as I remember, bacteria were not even alluded to in our course of pathology, and it was only from Lord Lister that we heard the real facts so far as they were known, or gained any idea of the importance of their study; but even at that time, although his methods of treatment were already yielding brilliant results and saving many lives, and although he had deduced from clinical facts many points in the life-history of bacteria and their relations to the living body, which were only confirmed by experiment subsequently, still the number of actual proved facts was extremely few.

It is difficult for those who have only taken up the subject of bacteriology comparatively recently to realize the absolute blank which it presented even twenty years ago. When I became house surgeon to Lord Lister in 1876, objections of all kinds were urged against the theory on which Listerism was based, some denying the existence of bacteria at all, others maintaining the theory of spontaneous generation; some asserting that organisms were always present in the healthy tissues, others denying that they had anything to do with disease. These objections led me to take up bacteriology, for it seemed to me of great importance to ascertain whether or not, as the result of antiseptic treatment, organisms were absent from the discharges from the wounds. Although at the present time such an investigation would be one of the simplest, yet when I came to carry it out I was met with the greatest difficulties. Practically nothing of the kind had been done before, and all the means of investigation had to be devised. Methods of staining bacteria had not been introduced, we had no oil immersion lenses, and I very soon found that by looking at discharges from wounds containing leucocytes, granular matter and débris with dry or water immersion lenses, and without substage condensors, no satisfactory result could be arrived at. Hence I came to the conclusion that attempts must be made to see whether organisms grew in suitable fluids inoculated from the discharges. Here again everything had to be devised. A suitable pabulum, methods of sterilization, of inoculation and of incubation had to be worked out. A large amount of time was spent in getting over the preliminary difficulties, and after a satisfactory method had been found, much labor had to be devoted to preliminary questions, such as spontaneous generation, morphologic characters of bacteria, their presence or absence in the living body, conditions of growth, and so on.

A great advance which followed soon afterward was the remarkable research by Lord Lister on the bacterium lactis, in which he devised a method of separating bacteria by fractional cultivation, which resulted in the separation of the bacterium which causes lactic fermentation from other organisms. By this research, apart from the method, a great step was gained in the proof of the specificity of a particular bacterium, both as regards morphologic characters and chemic action.

Then came Koch's work on infective diseases of wounds, and the publication of his methods of staining and examining bacteria and of cultivating them on solid media, and this work is at the foundation of all modern bacteriologic research. From this period the investigations have branched off in two directions: 1, almost all the infective diseases have been investigated for parasitic organisms, and in a large number the causal agents have been identified; 2, researches have been carried on tracing out the life history and functional activity of bacteria, and in ascertaining what occurs in the body when organisms or their products are introduced.

From the latter point of view we come to another great landmark in the study of bacteriology, namely, Metchnikoff's work on phagocytosis, a theory which has proved a most suggestive working hypothesis, leading to many of the researches which have given bacteriology its present position.

Many problems remain unsolved. In tuberculosis, why is it that in one part of the body we have a slow growing lupus disease, and in another part, perhaps of the same body, a rapidly developing tuberculosis? None of the explanations usually given, such as differences in the structure or resisting power of the tissues affected or of the individual, differences in the virulence or activity of the organism, etc., seem to furnish sufficient explanation. And the same problem is apparently presented with regard to the bacilli of diphtheria, in that we may have in one case a true diphtheria, in another a membranous rhinitis, while in a third, although the bacilli are present in the throat, the individual may be apparently healthy.

Another very remarkable problem is presented by the results which follow free incisions into tuberculous tissue. An incision is made into the abdominal cavity, masses of tuberculous tissue and tubercle are found scattered over the peritoneum, nothing whatever is done, the wound is stitched up, and yet in many cases the patient, who up to that time has been going steadily down hill, begins to pick up, and the disease may come entirely to a standstill. This phenomenon is not limited to peritoneal tuberculosis. When I was a student, the tuberculous nature of what are now recognized as tuberculous diseases of the bones and joints was then only suspected, and was not generally accepted by the medical profession. At that time Lord Lister, under the impression that these diseases were of a simple inflammatory nature, and having observed the improvement which often followed free incisions into chronically inflamed tissues, began as an ordinary line of practice to make free incisions through the thickened synovial membrane of tuberculous joints with the view of relieving tension, which he looked on as the chief cause of the continuance of the trouble. Nothing else was done, the joint was not even washed out, nothing was taken away, and yet in a considerable number of cases so treated improvement began from the time that the incisions were made; the patients lost their pain, the wounds gradually healed up and the disease subsided. Even in cases in which the results were not so satisfactory it could as a rule be noted that, although the swelling continued in other parts of the joint, and although the disease began again after a few weeks as vigorously as before, yet for a time at least the thickening disappeared in the neighborhood of the scars, showing that there at any rate temporary benefit had occurred. What possible explanation can we give of such a result? The older surgeons used to speak of "setting up a healthy action in the part," and were quite satisfied with that statement. Such a view is too vague for us nowadays, but may there not be here a possible working hypothesis which if followed out might throw light on this matter? May not the occurrence of healing processes at one part influence in some way or other morbid processes in the vicinity?

Again, what is the meaning of a chronic abscess? How is it that the tubercle bacilli at one time produce a quantity of tuberculous tissue, at another a cheesy mass and at another a chronic abscess?

In connection with the pyogenic organisms also we have many problems. How is it, for example, that after an abscess is opened antiseptically suppuration at once ceases? If instead of opening the abscess antiseptically a poultice be applied, suppuration goes on and may be very profuse. But if it be opened at a time when there is free fluctuation and when it is beginning to point, and if the necessary antiseptic precautions be taken and proper drainage provided, no more pus forms, and yet when the abscess is opened it is found to contain living pyogenic organisms. We can easily understand that the subsidence of the fever and general disturbance is due to diminished absorption of toxic products. But why do not these living pyogenic organisms keep up the suppuration? and why is it that after two or three days one may fail to obtain any cultivations from the serum which escapes from the wound? If the inflamed part be opened up antiseptically, however, at an early period, just when pus is beginning to form, there is not always the same complete absence of suppuration, although it seldom goes on to any considerable extent.

Again, an operation wound becomes septic and one naturally opens it up freely and establishes drainage; but here suppuration does not cease at once in the same typical manner as in the case of an abscess which has existed for some days. The old surgeons used to speak of an abscess being "ripe," and they allowed it to remain unopened for some days until it was pointing. They found that if they opened a deep abscess early suppuration went on and was apt to extend. No doubt a variety of causes led to this dictum; they did not provide proper drainage; they introduced other and more vigorous organisms at the time of operation and afterward, etc.; but do not the facts seem to indicate that, as regards the cessation of suppuration, there is some ground for this idea of ripeness. Is it possible that when the abscess has attained a considerable size and the tension of the pus in it is great the sudden release of the pent-up fluid may lead to such a pouring out of serum containing antitoxic substances as to absolutely destroy the organisms present, while, the case being treated antiseptically, no fresh organisms can come in to take their place? And yet I can hardly think that that is the whole explanation.

Although it is in the department of bacteriology that the most striking advance has been made, great progress has also gone on in pathology generally, in a considerable number of cases no doubt stimulated by the results of bacteriologic research, and more especially by Metchnikoff's work. The subject of inflammation has had much attention paid to it, although I can not say that to my mind it has been made any clearer. The tendency now appears to be to regard inflammation as the natural effort at repair after injury. At one time this was the view held by surgeons, and the doctrine was that inflammation was essential to healing, and in the description of healing by first intention it was stated that a red blush occurred around the wound, not so severe, however, as where suppuration takes place, and that without this red blush the edges did not adhere. When antiseptic treatment was introduced it became evident that no inflammatory blush or other sign of inflammation was necessary for healing by first intention; in fact, it was found that wounds healed best when no visible signs of inflammation was present. I have, therefore, always taught that inflammation and healing are two different and, indeed to some extent, antagonistic processes, and that although in every wound the tissues in resenting the injury show the early stage of inflammation, yet if no organisms be admitted the inflammatory phenomena soon pass off, and where there is destruction of tissue a second process, namely, that of repair, begins. I still look on inflammation as the

mechanism which gets rids of noxious agents or neutralizes their effects, and on the healing process as that which repairs defects, whether they are caused by injury and associated with inflammation or not. In fact, inflammation must be followed by repair if recovery is to take place, but repair need not be preceded by inflammation. The difficulty arises from the close association of the two processes, both of which have to do with the growth of cells, and from the fact that repair follows as soon as the inflammation begins to subside. Hence, under the microscope, except in cases of acute suppurative inflammation, one sees the two processes at work side by side, and it is not a matter of surprise that they should be confounded.

When Cohnheim first published his observations on the emigration of corpuscles, it was thought by many that the leucocyte was everything and did everything, but it was soon evident that other cells of different origin must be taken into consideration. When Metchnikoff's theory of phagocytosis first came out some of those who adopted it assumed that all wandering cells were phagocytes; but here, again, further investigation has shown that cells differ greatly as regards their phagocytic action. I think that a good deal of the confusion of these processes arises from the fact that expressions involving a teleologic argument are becoming very common, more especially with regard to the protective arrangements of the body. On the idea of an acting intelligence on the part of the cells, the two processes would naturally go together; but, looked on as the simple effect of an injury, they should, I believe, be regarded as independent, and the less and the shorter the inflammation the better and quicker the healing process.

A very remarkable thing in connection with these advances, especially in experimental pathology, is the enormous direct practical benefit which has already resulted to the human race; and it is sufficient answer to the antivivisectionists who oppose the use of intelligence and observation and experiment, to point to the saving of human life and the relief of suffering which has taken place in the last few years. Since Pasteur's experiments on spontaneous generation were published remarkable results have been attained in treatment as the result of experimental pathology.

Scientific efforts to arrive at the truth are necessarily slow and must be carried on without any regard to possible ultimate practical results. When the earlier investigators studied the phenomena of electric action they could have had no idea of the revolution which this study of electricity would effect in the history of the world. When Pasteur resolved to test the theory of spontaneous generation, it did not seem likely to lead to any beneficial result; indeed, his friends tried to dissuade him from entering into what was apparently a useless investigation, and yet what numbers of human lives have been saved as the result of that work and what incalculable benefit has accrued. It is greatly the fashion with the opponents of experimental research to demand a single instance in which an experiment has led to the discovery of a means of cure; but in no department of science has a single experiment of itself alone led to the practical result. The final observation which led to the practical result has been built up on numerous and laborious preliminary investigations and observations. And similarly, in regard to the cure or prevention of disease, the final trials on man have been led up to by numerous preceding observations and experiments. If these deluded people had their way, the result would be that experiments would be limited to man, and everyone to whom a new idea occurred would apply it without any previous investigation—surely an appalling prospect, whether for physician or patient.

The practical results already obtained affect diagnosis, prophylaxis and treatment. The diagnosis of many parasitic diseases has now been rendered certain and easy by searching for the causal organism, and I need only instance such diseases as diphtheria, tuberculosis, malaria, anthrax, gonorrhea, etc. It is not only by the discovery of the parasite that diagnosis is assisted, but also by other effects of the organism, such as the sort of changes set up in the tissue, the reaction to products of the organism, for instance, tuberculin and mallein, etc. If no other practical advance had resulted from bacteriologic work, the possibility of establishing a definite diagnosis in obscure cases is surely a gain of the utmost importance.

The greatest of all the advances, because so wide-reaching, has been in the prophylaxis of the disease, especially in the prevention of septic disease after operations, as brought about by the discoveries of Lord Lister. By these discoveries the occurrence of sepsis in septic wounds are much diminished and numerous lives are saved, not only in this way but also by the fact that the Listerian treatment permits the performance of many life-saving operations which could not otherwise be attempted.

Lastly, I may refer to advances in the cure of disease. In the case of diphtheria there can be no question that the antitoxin is a most potent curative agent and that used in the early stages it is almost certain to cut short the disease. As regards tetanus, the evidence in the case of animals is absolutely convincing, but in patients suffering from the disease the effect is not certain, probably because we have to do with an acute illness, which runs its course before the serum has had time to act. The same may also be the case with the antistreptococcic serum, although I have great doubts of its value as a curative agent. In other instances, such as plague and snakebite, we may apparently look forward to a cure; and researches are being carried on with regard to pneumonia which may lead to valuable results; nor must I forget to mention Pasteur's system of inoculating cattle against anthrax. What are we to say about the new tuberculin? We all know how careful an observer Koch is, and the fact that he looks on it as a valuable remedy is to my mind sufficient to make it necessary to give it a careful and hopeful trial.

But it is not only in the direction of bacteriology that advantage has resulted from pathologic research. Look at the advances in treatment from the use of organic fluids. As the result of observations on man and researches on animals as to the effects of excision of the thyroid gland attempts were made to transplant the healthy thyroid gland into animals and patients in whom it was absent and following these attempts the use of thyroid extract has ultimately come to be a recognized method of treatment. There is, perhaps, nothing more striking in medical treatment than the rapid and remarkable improvement in cases of myxedema from the use of thyroid extract.

I might enumerate many other instances of direct benefit from pathologic research, such as the advances in the treatment of tuberculous diseases of bones and

joints as the result of better knowledge of the nature and distribution of the disease, the treatment of appendicitis and the investigations on peritonitis and diseases of the appendix, the more complete operations for cancer following fuller study of the mode of spread of the disease, and so on.

But while pathologists are thus working out problems which affect the general well-being of mankind and the solution of which can be no personal gain to themselves, is it too much to ask mankind to furnish the means for such research? The English are looked on as a thoroughly practical people, and yet it is a very remarkable thing that England is almost the only country which does not realize the importance of scientific research and the result is that in England, with very few exceptions, men who might otherwise have thrown much light on these matters are compelled to turn their attention to practice in order to make a living. Unless work of this kind is done how can we hope to advance with any rapidity in the treatment and cure of disease? The surgeon or physician must wait till the information of which he is urgently in need has been acquired for him by the pathologist. Such apathy can surely only be the result of ignorance. A rich man affected with an obscure or incurable malady can not understand how it is that he fails to obtain the definite opinion or the relief which he so earnestly desires and for which he is prepared to pay any price. Surely if he understood the meaning and importance of pathologic research and that the practicing physician can only apply and carry out what is taught by the pathologist, he would bestir himself to aid research in order to gather information which might be of much use to him and others.

ORIGINAL ARTICLES.

EXPERIMENTAL BASIS OF THE DIETETIC AND MEDICINAL TREATMENT OF HYPERACIDITY AND GASTRITIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

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Boas, who first used the finding of fragments of mucosa in the vomited matter and gastric wash water for diagnostic purposes, attributed great importance to this way of finding out the real state of the mucosa. He held that, in certain conditions of suppressed secretion, the differential diagnosis between a possible neurosis and a genuine gastritis with a glandular atrophy was only possible by examination of such pieces of mucosa. Rosenheim, Boas and Julius Friedenwald, *Med. News*, June 22, 1895, emphasize the value of qualitative and quantitative testing of rennet zymogen to differentiate between chronic gastritis with glandular atrophy and carcinoma on the one hand, and nervous dyspepsia and secondary gastritis on the other. However, Ewald and also Einhorn have asserted that absolute deficiency of rennet zymogen is not pathognostic for atrophy, therefore it would indeed seem as if a certain diagnosis could only be made by a small piece of mucosa.

Is there any clue which can be derived from these pieces regarding the state of the mucosa in the secretory disorders? This I will try to answer in the following. Hayem, to whom we are indebted for the best histologic investigations of the gastric mucosa, emphasizes that the individual elements of the mucosa, gland ducts, superficial epithelium and interstitial tissue can become diseased in a variety of ways; the various portions of the stomach fundus, pylorus and cardia may exhibit different affections; and finally the mucosa may at different parts show different phases of disease. He distinguishes a parenchymatous and an interstitial gastritis. First the parenchymatous:

1. *Gastrite parenchymateuse hyperpeptique chloro-organique.*—Under this he has two subclasses: *a, d'emblée*—dyspepsia coming on at once, in the first stage of digestion; *b, tardive*—coming on in later stages, in one and one-half to two hours. Under this hyperpeptic parenchymatous gastritis Hayem means, clinically, a hyperpepsia with hyperacidity, and anatomically, degeneration of the principal central or chief cells with proliferation of the parietal border or oxyntic cells.

2. *Gastrite parenchymateuse muqueuse*—"gastritis mucipara," by which he means a mucous degeneration, a process taking place principally in the vestibules to the gland ducts (which are lined with columnar epithelium), and corresponds to the Schleim Katarrh of most German writers. This is associated with hyperpepsia and subacidity.

3. *Gastrite parenchymateuse atrophique*, which signifies anatomically the total atrophy of the glands without interstitial processes, and clinically, anacidity or achylia. The interstitial forms he separates into two classes: those in which the round cell infiltration, and those in which the sclerosis, *i. e.*, connective tissue proliferation, predominates. These processes are described as occurring purely as such, or mixed with forms of parenchymatous gastritis, and as leading to sub- or anacidity. In order to bring my results in critical consideration with those of Einhorn, I have adopted his classification of the anatomic conditions found in these fragments. There is, however, one objection that can be urged against it, and that is the apparent fact that he has based his system on conditions of the gland tubes and interglandular tissues exclusively, and mentions the state of the cells only once in six types described. I will therefore supplement his categories by adding the state and condition of the vestibular or alveolar columnar cells (Vorraum Zellen), and the condition and numeric relations of the chief, central or ferment cells (Hauptzellen) and the parietal, border or oxyntic cells (Belegzellen).

1. Normal. Gland ducts and interglandular tissues exist in normal proportions. Columnar epithelium of the surface and that of vestibule normal, with scarce cells showing at their free ends slight mucoid metamorphosis. The average number of parietal or oxyntic cells in six ducts which were sectioned very nearly down the center was twenty-two to forty.

2. Connective tissue excess. Proliferation of connective tissue around the glands, glands and epithelial cells as in normal condition.

3. Proliferation of glands. Under this class I have in nineteen cases been impressed with the probability that there must be three types of this condition:

Type *a*.—In this subtype there is a proliferation of gland tubules. Under the same field of microscope there will be more than under normal conditions, since they are much closer to each other, but the number

of central and oxyntic cells are from eighteen to forty-two, or the same as under the normal condition.

Type *b*.—Increase of oxyntic or parietal cells with normal number of gland ducts. Here there seems to be no proliferation of the gland ducts, the connective tissue and the ducts bear the same relation as in class 1, but the anilin staining, oxyntic cells may be so increased that they lie in juxtaposition, giving the whole duct the appearance of a peptic duct of the dog; the number may reach seventy in one duct. The oxyntic cells are increased in size; the nuclei stain very dark.

Type *c*.—Increase of the number of ducts in which the number of oxyntic cells appear normal in size and number, and in the same fragment or section portions of mucosa in which the ducts are not augmented, but the oxyntic cells are increased in number and size; this third is then, it would seem, a combination of types *a* and *b*. When there are many oxyntic cells above the normal, the entire gland duct assumes a tortuous or elongated shape. It seldom extends down into the mucosa in the same plane, therefore it is very rare that a section will strike down the middle of a duct. Generally the counts in six ducts struck fairly along the central canaliculus are taken as an average.

4. Incipient atrophy. To the same field under the micrometer there are fewer glands than normally present. They appear shrunken and smaller, and at the same time the spaces between the glands are larger than normal, owing to an increased connective tissue formation; the latter is thickly invaded as a rule, with small round cell infiltration.

5. Atrophy. In complete atrophy there are only remnants of glands left, a few degenerated cells lying in empty circular spaces where glands had previously existed; there is also a diffuse round-celled infiltration.

6. Vacuolization. Round or ovoid vacuoles exist within the glands in large numbers, being the result of mucoid degeneration of some of the glandular cells; this is generally associated with connective tissue proliferation. Vacuoles are present in the gland cells normally and can be seen in the drawings of Kupher and Stöhr. I have also seen them in both longitudinal and cross sections of the gland tubules, but rarely more than two to three to the entire duct. It is conceivable that they may be produced by the process of hardening and imbedding. Some of the fragments obtained from stomachs may show characteristics of two types.

DEDUCTIONS FROM THIRTY-SIX CASES.

In eight *healthy* persons the mucosa fragments were normal in six; proliferation and autodigestion marked in one, which also showed beginning small round cell infiltration between the ducts; connective tissue increase in one. In the first of these cases the examination showed proliferation in one fragment and a normal condition in a second one found in the same wash water.

In eighteen cases of *hyperacidity*, the fragments of gastric mucosa were found apparently normal in four; atrophy of gland tubules and connective tissue increase so that there were fewer glands, but in these few there were contained a larger number of oxyntic cells than normal, in two cases; proliferation of gland ducts with apparently normal oxyntic cells in six cases; proliferation of oxyntic cells, generally without marked increase in the gland tubules, in six cases.

In twelve cases of *anacidity* or *subacidity* the fragment was apparently normal in two cases; proliferation of glands with marked small round cell infiltration was found once. Atrophy in some form was found in the fragments from the nine remaining cases.

In establishing the classification of euchlorhydria and hyperchlorhydria we could not be guided exclusively by the amount of free HCl found after the double test meal used at the Maryland General Hospital and described in the author's book (Hemmeter, "Diseases of the Stomach," p. 111. P. Blakiston Son & Co., Philadelphia, 1897). Thus, a young, vigorous farmer, aged 25, who had never had any disease, showed on repeated examination an amount of free HCl equal to 60 degrees, with a total acidity of 80 degrees. Ordinarily, judging simply from the analysis, such a case would be diagnosed as hyperacidity. However, these cases can be diagnosed justly and accurately when considered together with concomitant signs and symptoms only. Although this case had the large amount of free HCl, there was no starch indigestion, no erythrodextrin, no pyrosis; there were no symptoms referable to the stomach at all, the man was in perfect health.

Another case, a neurasthenic female, had intense suffering from hyperacidity and occasional gastroxynsis, and the amount of free HCl was never over 30 degrees. This case showed hypermotility. The stomach as a rule was empty twenty-five minutes after an Ewald test meal; with my intragastric rubber bag in connection with the kymograph, she showed very frequent and sudden gastric peristalsis of unusual tonicity.

SUMMARY.

Eight *healthy* persons: Perfectly normal in six; *a*. glandular proliferations; *b*. normal in 1; connective tissue increase in 1.

Hyperacidity in eighteen cases: Normal in four; atrophy in two; proliferation of glands in six; proliferation or hypertrophy of oxyntic cells in six.

Anacidity or subacidity: Normal in two; proliferation of glands in one; atrophy in nine.

Proliferation, therefore, according to this table is present in two-thirds of these cases of hyperacidity, and atrophy in three-fourths of these cases of anacidity or subacidity. Einhorn does not give any results from examination of perfectly healthy individuals as his cases of euchlorhydria seem to be in patients.

Of his twelve hyperacid cases three were normal or very nearly so, six showed proliferation and three showed connective tissue proliferation. In his cases of anacidity, or rather what he calls achylia gastrica of which there were seven cases, there was atrophy three times, marked vacuolization once, proliferation once, and normal condition twice.

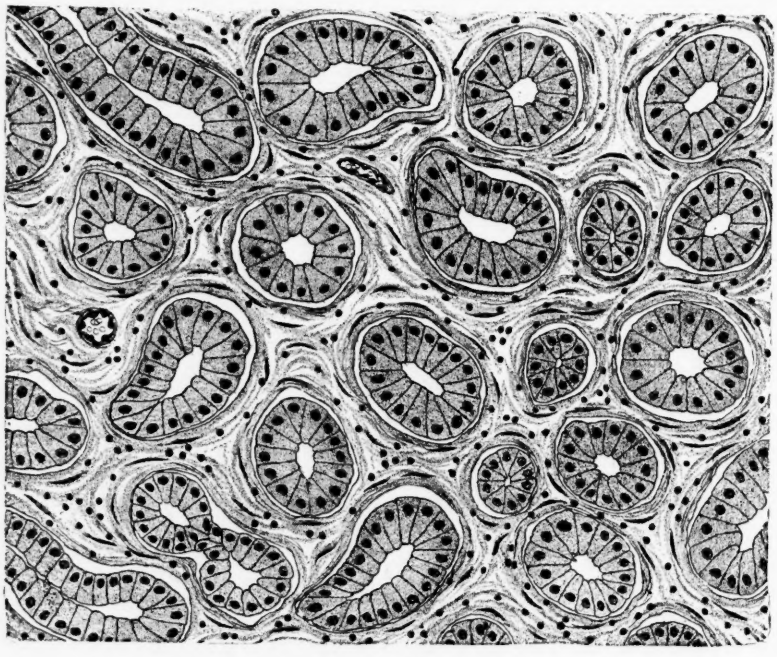
On the whole, judging from Einhorn's results, Cohnheim's, Hayem's and my own, the conclusions seem justifiable that proliferation of glandular elements is present in from one-half to two-thirds of the cases of hyperacidity, and atrophy is present in from one-half to two-thirds of the cases of anacidity.

Adolf Schmidt (*Virchow's Archiv*, Bd. cxliii, S. 478), asserts that the epithelium of the stomach is preserved better than the gland cells in inflammatory conditions of the mucosa. This he says is particularly so in chronic gastritis which forms island-like foci in stomachs otherwise not much changed. My experience and that of W. D. Booker, is not in accordance with this observation (see pathology of simple, acute and chronic gastritis in the clinical portion of Hemme-

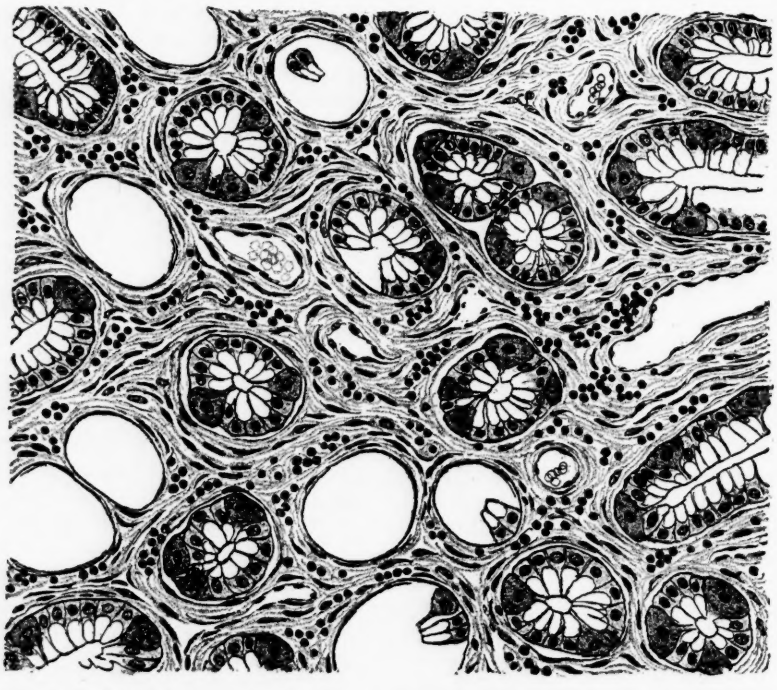
ter's "Diseases of the Stomach"). Although I preserved the stomachs by injecting them with alcohol immediately after death (within twenty minutes), also with formalin and sublimate so that autodigestion was at once checked, my sections showed generally a more serious destruction of the surface epithelium than of the gland cells. At times both are so much altered that it is impossible to say which is most or least affected. It seems in chronic gastritis that new epithelium will be reformed quite rapidly where the old has been lost or destroyed.

In suspected cases of malignant neoplasms fragments of the growth are occasionally found and are of importance in the diagnosis. In carcinoma of the cardia or esophagus they are most frequently found in the lower or side opening of the tube, as it must pass through or over the growth on its way into the stomach; but even in malignant growths of other parts of the stomach, patient searching in the sediment of the wash water will sometimes reward the clinician by the discovery of tumor fragments. The first wash water in the morning, about 500 c.c., should be permitted to settle twelve hours in a conical glass such as is used for the settling of urinary solid constituents, and the sediment should be examined under a low power (about 50 diam.) or the sediment may be more expediently brought down in the centrifuge.

Once I made the diagnosis of carcinoma when no



Fragment of mucosa showing normal condition of glands; very slight round-celled infiltration. From Hemmeter's "Diseases of the Stomach," P. Blakiston Son & Co., Philadelphia, Pa., October, 1897.



Atrophy and vacuolization of glandular elements; mucoid degeneration of chief or central cells; comparative preservation of border or oxyntic cells; from a case of gastritis acida. From Hemmeter's "Diseases of the Stomach," P. Blakiston Son & Co., Philadelphia, Pa.

tumor was evident from repeatedly finding involuntary muscle fibers when no meat had been eaten for three days after preceding lavage. It proved to be a broad, flat carcinoma of the posterior wall.

The sections were stained in a variety of ways, principally in the eosin-hematoxylin, Golgi and Bismarck brown stains. The minute communications of the oxyntic or parietal cells with the central duct are best brought out by the Golgi method.

The drawings of fragments found in the wash water of glandular proliferation with glands closely packed and connective tissue diminished, and of glandular atrophy, mucoid degeneration, vacuolization, and small cell infiltration are all explained by the text accompanying the illustrations. These drawings are taken from the author's text-book, "Diseases of the Stomach." We have seen that histologic changes approaching or actually representing pathologic states may be going on in perfectly healthy stomachs. Furthermore, the stomachs of diseased patients may on serial sections show a different pathologic state at different places of the mucosa. Therefore, it must be borne in mind that although the findings in hyperacidity and anacidity appear to be in some relation to the disease, this kind of investigation must not be relied on as representing in a given fragment the condition of the entire mucosa. It represents the state of the location from whence it sequestrated, and that not being accurately known generalizations must be made with caution.

It is therefore rational to presume that there are at least two kinds of hyperchylia: One which is of neurotic origin and in which the acid elements of the mucosa are not hypertrophied or augmented, and the other in which the neurotic symptoms are absent, or at least not very marked, and in which a decided proliferation of the secreting cells of the gland ducts can be made out. It is conceivable also that in the neurotic type, although there may be no hypertrophy and increase in the number of gland cells at the beginning of the disease, the constant demand upon and stimulation to the increase of acid and ferments may, in the course of the disease, eventually bring about an oxyntic cell, hyperplasia and hypertrophy. Edinger explains the anatomic changes in the spinal cord and nerves by a disproportion of the function of activity and the replacement of nervous elements; an increased activity of an organ leads to straightening of the same and increase in its volume; inactivity leads to a weakening and atrophic state of an organ. W. Roux ("Entwickelungs-Mechanick der Organismen," 1895) uses the expression "each cell gains a living by work, and the more it works the better it is nourished and the stronger it grows." In hyperacidity the elements that come more into play and do more work will increase in strength and numbers and gain supremacy. Dujardin-Baumetz and F. Sohlern (*Berlin. Klin. Wochschr.*, 1891, 20 and 21); Fleiner (Volkmann's Klin. Vortr., 103) and Rummo (*Terapia clin.*, 1892, Nos. 10, 11 and 12), recommended a largely carbohydrate diet in gastric diseases accompanied by abnormal production of acid. We have satisfied ourselves personally, after a very large number of quantative chemic analyses of the gastric contents of healthy individuals after they had taken weighed amounts of pure proteid and pure carbohydrates, that the proteid articles of diet are greater stimulants to the secretion of HCl than the carbohydrates or fats. They therefore stimulate and irritate the secretory layer to a greater formation of hydrochloric acid; this has been experimentally proven to a certain extent by v. Jacksch in children. It is also known that the great variations stated by different authors as to the amount of free HCl that is normal in their localities are explicable by the nature of the various test-meals used by them. The amount of free HCl after the complex test-meal of Riegel and Fleiner in much greater than after a simple test breakfast which contains very little proteid. It must not be overlooked that an exclusive proteid diet causes the formation of excessively large quantities of soluble peptones and albumoses, which undoubtedly have an exciting action on the nervous system and constitute a favorable basis for the development of all kinds of neuroses. Although a diet rich in meat food is perfectly logical and cor-

Hypertrophy and proliferation of glandular elements, from a case of persistent hyperacidity.

rect in hyperacidity, careful quantitative analyses of the urine will show that the indican, the ethereal and preformed sulphates are very much more increased under this kind of diet, and that they become reduced as soon as the amount of carbohydrates is increased. Beef, mutton, lamb, venison, fowl and various fishes, undoubtedly relieve the main complaints of hyperacidity for a time. The gastric pain and the pyrosis disappear for a time at least, because the albumin contained in the substances combines with the excess of HCl, but in cases in which a lasting improvement is not affected by these articles of diet, and where the urotoxic coefficient, the amount of indican and aromatic sulphates become increased it is advisable to try a diet in which the proteids do not constitute the preponderance, but at least 50 per cent. of which is composed of fats and carbohydrates.

The following tables show the state of the urine in a case of hyperacidity, both under proteid and under a carbohydrate diet. The case suffered as a rule from auto-intoxication when the proteid food was in excess.

URINARY ANALYSIS.

Case 19.—April 12, 1896. W. M., male, age 35 years, hyperchylia, on proteid diet exclusively; no medicine. Free HCl=48.5 after Ewald test breakfast.

Indigo blue	very strong
Urea	22.712 grams
Uric acid	0.451 grams
Ratio	49.0
Preformed sulphates	1.826 grams
Combined sulphates	0.236 grams
Ratio	7.7

The combined ethereal sulphates and the indigo are present here in great excess; headache and much flatulence.

Case 19. May 12, 1896. W. M., hyperchylia, Free HCl=59. Mixed diet, containing rice, bread, oatmeal, together with small quantities of beef or soft boiled eggs, and milk and butter. Neutralization with alkalies and aiding the gastric amylolysis with ptyalin at one meal and taka diastase at another.

Indigo blue	very faint
Urea	42.641 grams
Preformed sulphates	4.000 grams
Combined sulphates	0.350 grams
Ratio	11.0

Patient feeling much better, less headache, debility and flatulence. This is an example of twenty analyses, showing that even with an excess of HCl the proteid putrefaction may be considerable and that the symptoms are relieved and the urine shows less of toxins on a mixed diet with treatment by ferments and alkalies.

These are only two examples of a series of eighteen analyses.

It is undeniable that carbohydrates are found undigested six hours after they are ingested, in the wash water from the stomach. This is what one should expect, since if the excess of hydrochloric acid is not neutralized by alkalies, the ptyalin can not act and it is impossible for carbohydrates to be converted into a soluble form, the HCl at the same time producing a pyloric spasm obstructing the passage into the duodenum. Even with a diet almost exclusively of a proteid nature, the alkalies are indispensable, as this food is in itself inadequate to combine with the excess of acid. We advise our patients to take their amylaceous foods in a very finely divided state when possible. Potatoes should only be allowed in form of purée. Beets, turnips and carrots should not be allowed at all. The artificially prepared soup meals (Kufeke's, Maggi's flour, Maltoleguminose) and soups made from aleuronat, and oatmeal flour are in these cases easily digested with the aid of artificial diastase or ptyalin. It is a very important question whether the diastatic ferment of the saliva is destroyed permanently or only temporarily by the excess of hydrochloric acid and whether after its action has been inhibited by the acid it can be restored by subsequent alkalinization. Boas ("Diagnostik u. Therap. d. Magenkrankh.," p. 19) has demonstrated that when saliva is exposed to the action of 0.15 per cent. HCl for one hour its action can be restored by alkalinization with bicarbonate of soda. In hyperacidity the percentage of acid reached is 0.2 per thousand of HCl; in severe cases 0.4 to 0.6 per thousand HCl. We have made a large number of experiments with the effects of hydrochloric acid on saliva, both with artificial test-tube experiments as well as experiments from stomach contents of patients suffering with hyperacidity, and have found that, although Boas's results are in the main true, the action of ptyalin after it has been exposed to an acidity of 0.3 per thousand for forty minutes can not be restored to the same efficiency it showed before it was subjected to the action of the acid; that is, alkalinization restores the action only partially. The conversion of starches by this ptyalin which has been thus detrimentally influenced by HCl takes place only very feebly, in other words, the ptyalin does not recover perfectly, it has been permanently damaged. These experiments have been repeated so often by us and the results have been so constant that they could not possibly be due to accident. They justify us in the conclusion that the internal administration of alkalies in hyperacidity will not restore gastric amylolysis although the distressing symptoms of hyperchylia will be relieved by it. It is therefore necessary, if we wish to aid digestion of starchy foods and not simply relieve the distressing symptoms of hyperacidity, not to depend on restoration of the function of ptyalin by giving alkalies. The employment of artificial ptyalin or diastase is here unavoidable; ptyalin, one-half to one gram (8–15 grains) given fifteen minutes before meals together with alkalies, effectively converts the carbohydrates into dextrose. The more carbohydrate is artificially digested in this way, the less undigested starch will naturally remain in the stomach. We will naturally, therefore, give the preference to a ferment which can in the shortest time convert the greatest amount of carbohydrate into dextrose. We have made a number of experiments with ptyalin and the diastase contained in malt extract, but the most effective agent that we have worked with is a ferment known as taka-diastase. This has the property of being far less susceptible to the destructive action of hydrochloric acid than ptyalin or malt extract. The objection we have to malt extract is that we have to give it in a large bulk to get a very small quantity of diastase. The extract itself contains fermentable sugars which, in some cases of indigestion, may give rise to fermentation in the stomach. Taka-diastase is a substance obtained from a fungus known as eurotium oryzae, which is sown on moistened sterilized wheat bran. A growth results which is found, under the microscope, to present peculiar crystals of pure diastase covering the roots of the eurotium which have penetrated the bran. The function of these crystals is to convert the starch of the bran for the nourishment of the fungus. We have employed taka-diastase in hyperacidity and in these rare cases of deficiency of saliva, which are found in the final stages of chronic Bright's disease, and after severe diarrheas. Malt diastase and ptyalin cease acting in the stomach contents much sooner than taka-diastase with a percentage of HCl equal to 0.04 per thousand to 0.05 per thousand of HCl, taka-

diastase will still transform more than 50 per cent. of starch into maltose. The following experiments will throw some light on the digestive power of taka-diastase. A starch paste was made from 5 grams of dry arrow-root starch with 500 c.c. of water. Mixtures were then made as follows:

1. 0.5 gram of taka-diastase + 90 c.c. of water + 10 c.c. of starch paste.
2. 0.5 gram of ptyalin + 90 c.c. of water + 10 c.c. of starch paste.
3. 20 gram of malt diastase + 90 c.c. of water + 10 c.c. of starch paste.

These three mixtures were placed at 40 degrees C. and tested from time to time with iodin solution. In periods of time varying from five to eight minutes No. 1 had reached the achromic point, while No. 2 had not reached the achromic point until one hour had elapsed. At the end of three hours No. 3 still gave a bluish violet reaction with iodin. In the presence of 0.015 HCl the action of the ptyalin and the malt extract were arrested, whereas the action of the taka-diastase continued unhindered. We therefore give taka-diastase because of its more effective and permanent amylolytic power, because of its cheapness, and because we are enabled to permit a diet rich in carbohydrate in cases of hyperacidity. The most essential thing in the treatment of an irritable gastric mucosa is rest for a short time, two or three days in every week; no food but milk or thin oatmeal gruel. To give meat and egg with a view to combine with the excess of HCl is only symptomatic treatment. But an amylaceous diet aims at the cause of the hyperacidity, because it is not a stimulant to HCl secretion and does not add to the irritation already present.

In recommending a carbohydrate diet in hyperacidity we are aware that it will generally not be tried until the proteid diet has failed to give permanent relief. The amylaceous diet is to a certain extent antiseptic by its tendency to keep the intestinal chyme acid by formation of lactic acid. The quantitative analysis of indican and ethereal sulphates will keep one posted on the degree of intestinal putrefaction under the two kinds of diet.

It is well known that hyperchylia often occurs in neurasthenia due to uric acid diathesis. The diet must then naturally be adapted as far as is consistent with the gastric function to the uric acid diathesis underlying the whole complication of symptoms (see Diät bei Gicht und Harnsäure dyskrasie, Penzoldt u. Stintzing, Vol. ii).

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DISCUSSION.

Dr. C. B. Lowe of Philadelphia—I had the pleasure yesterday of meeting the Japanese chemist, Dr. Takamine, the discoverer of taka-diastase. The remarkable activity of this amylolytic ferment was demonstrated by his placing a few grains in a test tube containing starch paste. After adding it, either in the dry form or as a liquid, the solution began immediately, and in a moment or two the contents of the tube were liquefied and converted. The experiment was a very striking one and demonstrated the great power possessed by this agent in the digestion of starchy articles of food.

Dr. R. G. Eccles of Brooklyn—Did I understand the lecturer to say that maltose would be absorbed from the stomach? I was under the impression that all starchy foods passed into the intestine where it was converted into dextrose by the pancreatic juice and the intestinal secretion. Perhaps Dr. Hemmeter will set me right on this point. I am not sure whether I fully understand his position in reference to the use of taka-diastase in cases of hyperacidity. It would seem to me that most of the starchy foods are not digested in the stomach, although the proteids are acted upon there.

Dr. F. E. Stewart of Detroit—In reference to the question of the absorption of maltose into the blood from the stomach, I would say that I am under the impression that Professor Chittenden found that it was not essential that the starch be entirely converted before being absorbed. Dr. Roberts of London found that the glycogen of the liver is very much like the same products of starch digestion.

Dr. Eccles—I would like to add that I have tried taka-diastase on myself and on patients and have found the results from it to be very good. I therefore was not criticising the treatment but merely desired information upon the physiologic and chemic basis of the method of treatment advocated by Dr. Hemmeter.

Dr. Frank H. Murdock of Pittsburg, Pa.—I have been exceedingly interested in Dr. Hemmeter's paper. I think that the question of hyperacidity of the stomach is one of very great importance and one which offers the most difficulty to me in my practice. If we can have within our reach remedies which, aided by diet, will afford the patient relief, we would certainly all be glad to know it.

Dr. Hemmeter—I must say that I am very much pleased at the discussion of this paper and at the questions which have been asked. One question was whether or not maltose is absorbed from the human stomach and enters the blood as such. I have invented a method of studying this problem by plugging the pyloric end of the stomach in animals; maltose is then introduced into the stomach. The pylorus being closed by the plug, it can not escape into the intestines. Nevertheless, shortly afterward there is no maltose left in the stomach. It is absorbed into the blood through the walls of the stomach. As Dr. Stewart has said, Sir Wm. Roberts has shown that maltose can be absorbed directly into the blood. Not only maltose, but albumose may be absorbed, and I have no doubt that egg albumin may be injected into the intestine and be absorbed directly into the blood without being digested at all. I have been asked how long amylosis will go on in the human stomach after an ordinary meal. Now it is limited by only one thing, that is, the change to an acid reaction in the

stomach contents. If the food stays long enough and there is not too much acid, the starchy constituents will be entirely converted in the stomach. In dilated stomachs, where there is destruction of the hydrochloric acid cells, the digestion of starch may go on for many hours. As soon as the proportion of hydrochloric acid reaches 0.15 then the action of starch ceases. This generally occurs on the average in about forty minutes after the close of an ordinary meal, so that we have this length of time in which to digest the starchy portions of our food in the stomach. If too much work is thrown upon the amylolytic action of the intestinal glands, there may be intestinal failure and intestinal indigestion. Because the amylopsin of the pancreatic juice digests starch and the ptyalin of the saliva digests starch, we must infer that their actions or end products are the same. The cases which Dr. Murdock has mentioned and in which we find alternating states of the secretion, one day hyperchylia, the next achylia, and perhaps in the next few days hyperchylia again, have been termed by me *heterochylia*. In determining the degree of acidity in these cases it is essential to know the amount of proteid in the test meal, because the secretion of HCl is greater after proteid than after amylaceous foods. The condition causing heterochylia can only be cured by correcting an underlying neurasthenia, by good hygiene, proper diet, electricity, baths, etc. Moreover, I believe that in many of these cases, lithemia and gout are at the bottom of the condition of heterochylia. In cases where this persistently exists, the patient may be taught to pass the stomach tube and wash out the stomach for himself with diluted HCl or alkalies as may be indicated, but it is impossible to go into the details of the treatment or give any sweeping advice for the management of such cases.

A STUDY OF THYROID EXTRACTS.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1–4, 1897.

BY W. H. NEILSON, M.D.

MILWAUKEE, WIS.

Interest in the thyroid body is not of recent origin. As far back as 1856, Schiff demonstrated, by his experiments on dogs, that this gland is an absolute necessity for the maintenance of life in these animals and his deductions have been abundantly confirmed by many observers since that time. After the removal of the thyroid gland a number of characteristic symptoms supervenes, as cachexia, emaciation, apathy and muscular tremor which may pass into convulsions before death ensues. The muscular phenomena appear to have a central nervous origin, for section of the motor nerves prevents them; and it is possible that the trophic changes noticed are also due to perverted nervous influence.

In rabbits, Hofmeister demonstrated that by removal of the gland, leaving the glandules of Gley, life might be maintained. The hair became coarse, the body short and thick, the growth of the skeleton was arrested, the epithelium of the convoluted tubules of the kidneys was altered, and enlargement of the hypophysis cerebri occurred (Crary). In monkeys, these changes occur more slowly than in the lower animals and resemble much the condition developed in man through destruction of the function of the thyroid. The pronounced symptoms of this condition are diminished mentality, muscular weakness, marked anemia, dry harsh skin and loss of hair, with an edema of the subcutaneous tissue which does not pit on pressure. If the individual so suffering receive hypodermatic injections of thyroid extract, or if it be administered by mouth, or even the raw gland be fed him, all of these symptoms, except the anemia, rapidly disappear and he regains his normal condition with the one exception. In the case of dogs, if a small portion of the thyroid gland, after its removal, be grafted into the peritoneum, the evil results are averted. So, too, if a small portion of the gland remain or the parathyroids be left the animal will apparently suffer no inconvenience. Thus it becomes clear that the thyroid body is intimately associated with the normal manifestations of life. There are two views obtaining as to the manner of this association. The one is that the thyroid is a destructive agent, destroying poisonous substances formed in other organs, which if undestroyed would cause the various symptoms found in myxedema. In support of this is given as a fact by some observers, contradicted by others, that products are found in the muscles, blood and urine of animals deprived of the thyroid, which are decidedly toxic in character. The other view is that the cells of the thyroid produce a true internal secretion which finds its way into the blood and plays an important part in producing normal metabolic changes in some or all of the organs and especially of the nervous system. This is supported by the facts that the injection of thyroid extract does good when the function of the thyroid is in abeyance; that microscopically it can be proven that the cells secrete the colloid material, and that it eventually finds its way into the blood by way of the lymphatics; that the beneficial portion of the secretion can by chemic means be separated from the gland, thus demonstrating that it is a secretion of that body. A great deal of work has been done to isolate the active principles of the thyroid secretion. Sigmund Fraenkel has been successful in isolating a substance which is intensely hygroscopic and soluble in water and alcohol, the empiric formula of which is $C_6H_4N_3O_5$, to which he has given the name of thyreo-antitoxin.

Experimenting on animals he found that under its administration there was acceleration of the pulse rate without the fall of blood pressure demonstrated by Schaeffer on intravenous injection of the extract. He also found that the heart of a frog, poisoned by muscarin, which had ceased to beat, was stimulated to activity by a few drops of a watery solution of thyreo-antitoxin dropped upon it. Moreover, he demonstrated that in animals deprived of the thyroid gland with the usual subsequent symptoms, that temporary relief, at least, was given by a subcutaneous injection of a 1 per cent. watery solution of thyreo-antitoxin. He maintains that this substance is an exact chemical and that eventually he will be able to give exact dosage. It is without odor and has a beefy taste.

Baumann and Roos make stronger claims than Fraenkel. By a series of experiments they have been able to isolate a brown amorphous substance which contains the remarkably large quantity of 9.3 per cent., dry weight, of iodin. It has been named thyroiodin. It is almost insoluble in water, only slightly so in alcohol, but easily so in dilute alkalies. The discoverers claim that its administration is followed by the same results as follow the administration of the gland itself, or its extract, in myxedema, obesity and parenchymatous goiters, and indeed that it is more rapid in its action. The amount of this substance varies in different thyroids, large ones only containing a trace of iodin, while in children there is less than in adults. Sheep thyroids are relatively richer in iodin and the maximum amount in humans is found between the ages of twenty-five and fifty. Drechsel has isolated two crystalline basic bodies from the thyroid, one of which is apparently identical with Fraenkel's thyreo-antitoxin. Both of these when administered to thyroidectomized animals exert a beneficial influence and Drechsel suggests that there "may

be three separate substances formed in the thyroid which are of value to the body and that corresponding to these the thyroids may exert a threefold effect upon body metabolism." Since Dr. R. G. Murray of Newcastle, England, first used the raw gland in the treatment of myxedema the treatment has been so elaborated and refined and its field of usefulness so broadened that thyroid extract has become a firmly established therapeutic agent, yet not so generally nor so fully recognized as it deserves. From year to year fresh triumphs are recorded for this remedy, not only in myxedema where its first laurels were earned, but in cretinism, acromegaly, rickets, obesity, catalepsy and ichthyosis it has scored signal success. The effects of the remedy administered in proper dose, from 1 to 5 grains of the extract, are to accelerate the pulse and respiration, to increase temperature, to improve tissue metabolism, to cause a greater elimination of urea and a more complete assimilation of nitrogenous products. There is also increased activity of the mucous membrane and skin, and the body weight is diminished, while at first there is muscular weakness. If the dose be too large there is flushing of the face, dizziness, accelerated heart action, with rise of blood pressure succeeded by a fall in pressure, nausea, vomiting, trembling of the limbs and other toxic symptoms of more or less gravity. This toxicity depends somewhat on the preparation, fresh glands being less toxic.

Great care must be exercised in keeping the dose within the limit to the individual, on account of the degenerated condition of the arteries in myxedema; over-stimulation of the heart might result in the rupture of a vessel. During its administration, in myxedema, the joint pains are not relieved, but are often aggravated. Indeed in some cases a synovitis develops, which however yields to the salicylates. Neither is the anemia at all relieved. The remedy should not be given in exophthalmic goiter, as the symptoms are painfully exaggerated. This fact has been mentioned by several and came under my observation in the neurologic clinics of the Milwaukee Medical College. That it has a promptly beneficial effect in myxedema I have had the pleasure of observing; also that the general condition of a patient suffering from acromegaly was improved thereby, and I am now treating a case of psoriasis, but have not had sufficient time to demonstrate its usefulness in this disease. If the discoveries of Fraenkel, Baumann, Roos and Drechsel are all that they claim we have a remedy in this extract which will have an application wherever there is retarded tissue metabolism. This opens up a large field and it remains for us to develop it.

SUCCESSFUL TREATMENT OF CHRONIC (SUBACUTE) RHEUMATISM.

BY GUSTAVUS M. BLECH, A.B., M.D.

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Chronic rheumatism, articular or muscular, is considered by the laity an incurable affection. The pain, stiffness, in other words, the disagreeable symptoms of rheumatism, however, drive them into the hands of physicians, usually after every kind neighbor's roots and liniments have failed.

It is this class of cases that the beginner in a community is most apt to get, the older physician's time being taken up with cases of a more or less acute character. Besides, the older physicians have prescribed once or twice for the rheumatic, but no cure being obtained he was dropped.

A few months ago the writer contracted chronic articular rheumatism and pleurodynia. It is therefore but natural that I should have paid some attention to this affection. Summing up my theoretical knowledge of the malady and my experience from actual practice, I think I can say without fear of contradiction that chronic rheumatism is a curable affection, and that every young practitioner could materially benefit his patients if he is willing to devote to them some time and labor.

The trouble is, most of our patients can not carry out instructions with regard to hygienic surroundings, occupation, diet, rest, etc. Chronic rheumatism, while not infrequently met with among the rich, attacks most frequently, however, the poor washerwoman, the bricklayer, and such classes of patients who are compelled to expose themselves to draughts, wet, cold and dampness. That these are etiologic, or at least predisposing agents no one will deny. We know very little and nothing certain as yet about the cause of acute inflammatory rheumatism, but we most certainly know absolutely nothing about chronic rheumatism, save that the above named agents favor the development of one or the other form of chronic, non-febrile rheumatism.

Although this paper can neither deal with either the causes, nor the pathology of the malady under consideration, I beg, for the sake of explaining my standpoint, to make these statements: 1. I am a firm believer in the fact that there are forms of so-called chronic articular and muscular rheumatism which are *never* following an acute attack. 2. That so-called gonorrheal rheumatism is not a rheumatic affection proper, but a complication of gonorrhea, and has no connection with rheumatism whatever. If Dr. Satterlee in his excellent monograph (Geo. S. Davis, 1890) takes an opposite view using "reason rather than empiricism" for his assertions, I speak from practical observation and actual experience among my own patients. That the same facts were observed by the most popular authorities everyone knows. Unacquainted as we are with the real etiologic factors of rheumatism, our treatment must be general.

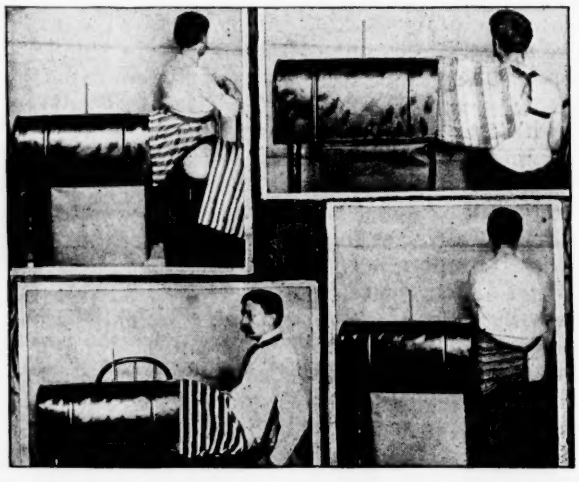
I shall not copy all those rules and regulations as laid down in text-books, but will come to the point. *Hygienic* treatment is desirable wherever such can be carried out. If we know that a certain occupation, a damp domicile, bad surroundings of the patient predispose if not actually cause rheumatism, what is more desirable than a complete change. Dietetic treatment should be encouraged wherever there is a so-called rheumatic or gouty diathesis present.

Internal treatment is practically useless. Salicylates, potassium iodid, arsenic, iron, colchicin and a host of other remedies have been tried but with what success everybody knows. A friend of mine asserted enthusiastically that he could cure every case of rheumatism, provided the patient takes unusually large doses of natrium salicylicum, but I never tried it more than once. The untoward effects this drug caused were more than my patient, a robust fellow, could stand.

External applications are quite popular, and rheumatic liniment manufacturers reap a rich harvest (financially, of course). Occasionally, when there is much pain and tenderness I prescribe an alcoholic solution of menthol, but expect a temporary effect only.

Electricity, both the faradic and galvanic current, are of little avail. Several years ago I treated a good many patients with this method. I had them come to my office daily for months and then they went away dissatisfied, claiming that while they felt somewhat better from such a prolonged treatment they expected permanent cures. From the strong faradic current I saw no benefit at all

When I contracted this affection which, by the way, located itself in my elbow and wrist joints of both hands, as well as in the form of a pleurodynia (making me at first believe I had some heart trouble), I thought of going to our nearest watering place—Mount Clemens. For various reasons, and on account of some cases demanding my personal attention I could not do this, so I decided to try the dry-hot air treatment which was recently so highly praised in French literature. I purchased from Messrs. Frank S. Betz & Co. of Chicago, their arm and leg bath, took four baths and was relieved. It occurred to me then that I was mistaken in my diagnosis. I then called on six parties, all of whom are my patients afflicted with one or the other form of chronic rheumatism,



with which affection they went around considering it of no avail to take further treatment. Relief followed immediately after the first bath in each of the six cases. Of course they would feel the symptoms return the next day. Then other baths were taken.

The following is a list of the baths administered:

Mr. A. F., aged 36. Had rheumatism two years. May 11, duration 18 minutes; May 12, duration 19 minutes; May 13, duration 21 minutes; May 14, duration 24 minutes; May 15, duration 26 minutes; May 16, duration 21 minutes; May 19, duration 30 minutes.

Mrs. A. F., aged 36. Had rheumatism five years. May 13, duration 18 minutes; May 14, duration 20 minutes; May 15, duration 22 minutes; May 16, duration 24 minutes; May 17, duration 26 minutes; May 19, duration 29 minutes; May 21, duration 22 minutes.

Mr. E. C., aged 29. Polyarthritis chronica, 2½ years. May 12, duration 15 minutes; May 13, duration 17 minutes; May 14, duration 22 minutes; May 16, duration 29 minutes; May 18, duration 30 minutes.

Mr. N. B., chronic muscular rheumatism, 3½ years. May 12, duration 10 minutes; May 13, duration 12 minutes; May 15, duration 15 minutes; May 16, duration 18 minutes; May 21, duration 22 minutes; May 22, duration 29 minutes; May 23, duration 30 minutes.

Miss E. T. My assistant, aged 24. Chronic rheumatism of muscles of arms, 1½ years. May 11, duration 18 minutes, temperature 206° F; May 12, duration 19 minutes, temperature 209° F; May 13, duration 20 minutes, temperature 211° F; May 14, duration 22 minutes, temperature 215° F; May 17, duration 30 minutes, temerature 220° F.

Mrs. F. D. Polyarthritis chronica 6 years, aged 38. May 10, duration 15 minutes, temperature 201° F; May 11, duration 20 minutes, temperature 202° F; May 12, duration 19 minutes, temperature 205° F; May 14, duration 21 minutes, temperature 209° F; May 19, duration 24 minutes, temperature 212° F; May 21, duration 26 minutes, temperature 217° F.

Dr. G. B. Writer, polyarthritis subacuta; pleurodynia a few weeks. May 2, duration 20 minutes, temperature 205° F; May 3, duration 22 minutes, temperature 208° F; May 4, duration 25 minutes, temperature 204° F; May 6, duration 30 minutes, temperature 221° F.

In every instance the apparatus was first heated about eight minutes, before treatment was begun.

In every one of the instances complete relief from all symptoms was experienced, and now within two months no recurrence, although we had here the most changeable and undesirable weather, and although all of the patients took neither any medicines whatever, nor did they change their mode of life, occupation and surroundings. One patient goes to his damp rag-shop daily; the other patients continued their usual lives. No massage was practiced after the baths save that I anointed the hands or legs with a little vaselin.

Of the value of dry-hot air in chronic rheumatism there can be no question. Shoemaker, Bartholow and other eminent authorities speak of it highly in their text-books on materia medica.

I have no doubt but what such treatment may prove of great utility in ankylosis, rheumatoid arthritis, similar affections and Bright's disease, but am unfortunate enough not to have had as yet any practical experience with such cases, but undoubtedly will use my bath again should any such cases come under my observation.

The hot air bath I use is a very neat looking piece of office furniture. It is an oxidized metal cylinder thirty inches long, fourteen inches high; a funnel and and pipe of same material carries hot air from a nickel plated heater to a hot air distributer. There is no smoke or smell. By means of several valves the heat can be regulated. A thermometer registers the amount of heat. The cylinder is lined with asbestos, arm or leg rested in a Turkish hammock. There are attachments for arms, legs, and other regions.

I am indebted to the manufacturers for the accompanying cuts which show the instrument plainer than any description could do.

115 Miami Avenue.

REST.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY C. F. ULRICH, A.M. M.D.

WHEELING, W. VA.

Rest is the restorer of lost power. Motion is the result of force exerted upon matter, and so long as the force continues to be applied and there are no impediments, the motion will continue. But to the motion of terrestrial bodies impediments always exist, and however much the motion may be stimulated by the renewed application of force, it will be retarded, and will ultimately cease. As an illustration, let us consider an engine run by water power, steam or electricity. As long as the power is applied, the engine runs, for a while, smoothly and with ease. Soon interruptions occur; there is a jar, and a hitch in the action. If this is not looked into and remedied, the machinery begins to run irregularly and something gives way. It either stops altogether, or its action becomes inefficient and the product of its labor useless. One of the most

prolific sources of impediment in such machines is friction. This is obviated, as far as possible, by lubrication. But the oil may be carelessly applied or may be of inferior quality, charged with impurities of a gritty nature, thus failing to prevent friction. Parts of the machinery become oxidized, corroded by acids or ground by foreign bodies that find their way into it. Parts are loosened by the violence of the motion, and this condition communicates itself to other parts, until the whole machine is out of order. Now the engine has to be stopped for repairs; the parts worn out or broken replaced by new ones, others cleaned, smoothed and otherwise made fit for use again. Most engines work all day and rest at night, during which period the "master of repairs" examines it and remedies any defect he may discover, in order that it may be able to resume work in the morning. When the works have to run day and night, and no period of rest can be allowed, they usually have duplicate engines, one of which can rest for repairs while the other is in action.

The human body is a wonderfully complicated machine, yet exhibiting an admirable simplicity in its arrangement and working. It has a "master of repairs" whose name is "Vis Medicatrix Naturæ." This repairing power dwells within and exercises its function all the time. If the body is properly nourished, the materials for repair are always present. By the process of assimilation the nutritive material is appropriated by each organ or tissue in quantities sufficient to supply the loss, while at the same time a depuratory process is going on to rid the system of the waste material resulting from activity or disease. The latter is accomplished by the emunctories or outlets: the bowels, the kidneys, the skin, the lungs. This double process, assimilation and depuration, need not be discussed here. In childhood nutrition must exceed waste, in order that the child may grow. In age the waste usually exceeds nutrition, as the body is wearing out; although this is not always apparent, on account of the deposit of fat. In the middle period of life, there should be a fair balance between waste and repair, which will be the case in a healthy body, provided no excessive or too long continued labor is imposed on any part of the organization. The system requires a certain amount and a particular kind of nutritive material to keep the animal machine in motion. If this were always systematically administered, the proper balance would be maintained and the body would continue healthy, barring external influences. But, owing to circumstances producing variation in the activity of some of the functions, thus increasing or diminishing the waste, the quantity of the required nutrition varies very materially. Besides, the ignorance of the individual as to what constitutes suitable nutriment, the unrestrained indulgence of the appetite, on special convivial occasions perhaps too frequently repeated, cause many to take too much food, or of an improper kind, along with undue quantities of intoxicating beverages. The food on these festal occasions is frequently of a richer and less digestible character than can be easily disposed of by the gastro-intestinal tract. Hence ensue various ailments, by which the whole machinery is disabled; such as gastritis, enteritis, gastro-intestinal catarrh, followed by dyspepsia and its accompanying horrors. The average man or woman now begins to take medicine: pepsin, peptonoids, stomach tonics, aperients, purgatives, etc. This may relieve temporarily in some instances, but generally leaves the digestive apparatus in a worse condition than before. These helps to digestion cause the stomach to depend upon them, instead of doing the work itself. As regards the purgatives which are so universally taken, and so frequently recommended by physicians, it is not known to the laity, and not always thought of by the medical practitioner, that they are detrimental to digestion, since they induce excessive peristalsis in the upper intestines, thereby driving off much of the partially digested nutritive material, together with the intestinal fluids that are essential for completing the process of digestion and preparing the product for assimilation. My favorite remedy, and doubtless the one to be preferred, is rest. When the headache and the acid eructations give evidence of the failure of the stomach to do its work, and of the consequent fermentation of the ingesta, I advise my patients to drink a quantity of warm water and give the stomach a rest. This will give the "master of repairs" dwelling in the body, time to correct the congestion which prevents the development of the gastric fluid and the resulting digestion of the food. After the expiration of the period of rest, I put them upon a suitable diet, both as respects quantity and quality, at the same time prescribing some simple innocuous medicine that will in some degree assist nature without interfering with any function. The homeopaths give medicine in infinitesimally small doses, endlessly diluted, and impress it on their patients that the slightest violation of their rules of diet and hygiene will render the remedy inert or even injurious. The rest which the stomach enjoys during its fast, the subsequent moderation in eating, with judicious selection of food, is what accomplishes the cure, unless actual destruction or perversion of tissue had taken place before the case came under the observation of the physician.

Let us now consider the muscular system. We know that every movement made by a muscle results in the destruction of a certain amount of its tissue. If the muscles are too severely taxed by unusual exertions, or by too long continued exercise, the waste is greater than the repair. A portion of the waste, not being entirely removed by the emunctories, remains as an irritant. The result is an unhealthy contraction of the muscles, in the form of cramps or twitchings, and the final wasting away, with the loss of power. Here again the best remedy is rest. By rest I do not mean the absolute cessation from labor, but moderate exercise, or such a change of movement as will bring another set of muscles into play, giving those that have been overworked less to do, which is often better than absolute quietude. The repairing force that exists and exercises its function in every department of the human organization, immediately goes to work to replace the wasted tissue and restore the lost power. While the organs are in full activity, the waste exceeds the repair and there arises an absolute necessity for rest. For this purpose nature has provided sleep, during which all the voluntary forces are held in abeyance, giving the nutritive apparatus a better opporunity for its work of restoring the lost power. The involuntary or automatic part of the system goes on all the time, but much slower during sleep, which is also equivalent to rest; for during the night's repose so much of the external disturbance is removed that the vital processes, viz., the circulation of the blood, the result of the heart's action, the act of respiration, the silent process of digestion and assimilation, hav-

ing less to do, can afford to work more at their ease than during the active employments of the day. The *vis medicatrix naturæ* not only supplies new material to replace the worn out and damaged portions of the organic tissue, but also provides "garbage carts" to remove that which has become useless and would clog up the works, thereby causing disease and often deranging the entire machine. I refer to the emunctories mentioned before. We will discuss one of these, the kidneys.

These constitute one of the most important organs of the body, since they separate from the blood the worn out material and the product of diseased or unhealthy action. This double organ is frequently overworked by the consumption of beer and other alcoholic beverages. It then loses its power of selecting and removing the superfluous and deleterious substances which must be carried off in order to preserve the health. In consequence of this the kidneys become diseased, so that their work is either not done at all, or their action is perverted, removing what is necessary to health and life, while allowing noxious substances to remain for the destruction of vitality. Now, if the kidneys were permitted to rest, *i.e.*, their labor modified and reduced, as I have explained, this diseased condition might be avoided. Abstemiousness from vinous and malt liquors, and the substitution therefor of innocuous beverages necessary to maintain the liquid condition of the blood and the proper consistency of the tissues, would so regulate the work of the kidneys that they would remain healthy and retain their normal powers. If more rest than this is required, the skin may be called in to do vicarious work, which can be done by diaphoretic treatment, hot vapor bath, etc. Overwork of the kidneys may also be prevented by a proper regulation of the bowels; for there is no greater enemy to the kidneys than habitual constipation, since that condition imposes upon them the labor of removing unappropriated material which can only with safety be done by the bowels.

Let us now speak of the most important organ of the body, the *primum mobile*, the great dynamo that moves and gives life to the beautiful and complicated human machine—the cerebrum. This is subject to the same physical laws as the rest of the organism. Every effort of the brain to induce motion of the muscles, through its electric wires, the nerves: every thought; every emotion, every strain on the mind, wears out a certain portion of it. If the brain is engaged in continuous action by day, and does not take the necessary rest at night, an unhealthy condition will ensue, resulting in lassitude, inability to perform its functions, perversion of its powers, and finally insanity or imbecility. Before the final catastrophe is reached, all sorts of irregularities in the general health occur, on account of the great influence of the brain on all the functions of the body. Now, if the brain enjoys its regular periods of rest, by relaxation from labor during certain hours of the day and undisturbed sleep at night; an extended rest during parts of the year, by change of occupation from the ordinary routine of business to something engaged in for pleasure, it will remain strong and healthy; more and better work will be done in the limited period than could be accomplished in a much longer time without the much needed rest. Excessive labor imposed on the brain by day prevents it from the needful repose at night, for there will be either no sleep at all, or at least unpleasant dreams; the brain working without the restraints that hold it in check during the waking hours. Then, when morning dawns, the poor brain is not rested at all, but is as tired as if it had worked hard all night. The waste thus caused is so great that it will be very difficult to make it up. When the brain is well treated, by systematic labor and a reasonable rest at proper times, it will last much longer than when it is abused by excessive, irregular and spasmodic work. We have examples of men who reached eighty, ninety, and even a greater number of years, whose minds remained clear and bright to the last. I shall mention Humboldt, Moltke, Bismarck and Gladstone, the last two of whom are living yet. But why should I cross the ocean, or go out of our own profession to find examples? Behold the great autocrat of the breakfast-table, the poet physician, Oliver Wendell Holmes! and in our midst, our noble and venerable founder, Dr. N. S. Davis, who has completed his eightieth year, who was the first to suggest the organization of the now famous AMERICAN MEDICAL ASSOCIATION, the fiftieth anniversary of which we are celebrating. For fifty years he has upheld and labored for the ASSOCIATION. Today his mind is as clear and his zeal as untiring as it was half a century ago. Had he committed excesses of any kind during that long period, we would not now rejoice at his encouraging presence and co-operation on this auspicious occasion. May he live many years yet to hold up the hands of the noble band of men whose pleasing duty it is to guard the health and the lives of our American citizens, and to rejoice in the success and prosperity of the AMERICAN MEDICAL ASSOCIATION!

All teaching is best enforced by example. If we desire to be heard and obeyed by our clients we must set them a good example in our own conduct. Let us be moderate, taking a reasonable rest in eating, in drinking, in physical exercise, but especially in the labor of the brain, which is the organ most extensively used, and often most abused, by the highly educated and constantly employed physicians. Let us exercise our powers systematically and cautiously, looking to the advantage and benefit of our patients, but at the same time not forgetting ourselves. The physician should take a short rest every day. If he is engaged during the night, let him enjoy a siesta in the daytime. A little recreation at moderate intervals during the year would be of great benefit. Rural excursions, away from the noise, dust and turmoil of the city, would recuperate his tired body and exhausted mind so that he could return to his work fresh, rejuvenated and full of vigor. But of all things, let him not fail to take a lengthy vacation once a year. If in winter: he can rest himself in the orange groves of Florida; or, should his means allow it, he might repose in the classic shades of beautiful Italy. In the summer the magnificent lakes of the north, or the delightful resorts on the seacoast will afford the coveted rest and recuperation. But under no circumstances should he fail to attend the meetings of the AMERICAN MEDICAL ASSOCIATION, where he will meet his colleagues from the North, South, East and West, enjoy an interchange of views and cultivate the social side of his otherwise hard life, of which he sees but little while toiling to improve health and save life. Pursuing this course, the physician will be happier, healthier, stronger, both in body and mind, will live much longer, and will enjoy his intellectual faculties to a ripe old age. Then, when his allotted time is com-

pleted, he will enter upon his everlasting rest, respected, loved and honored by his contemporaries, while his memory will be cherished by a grateful posterity.

TWO CASES OF TRISMUS NASCENTIUM SUCCESSFULLY TREATED BY TETANUS ANTITOXIN.

BY JACOB FRIEDMAN, M.D.

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ST. LOUIS, MO.

Within the past five weeks I have had an opportunity of experimenting with tetanus antitoxin in the treatment of two cases of trismus nascentium. This disease of infancy has been almost uniformly fatal and, notwithstanding the fact that all kinds of treatment have been used, has thus far resisted every measure.

On learning of the successful treatment of tetanus in the adult by the serum treatment, I determined to try the same remedy for the infantile disease. By reason of the extreme youth of the patient one has no guide as to the quantity of the serum to be used. As will be seen in the first case, knowing that the child would die under the ordinary plan of treatment, a large dose was used in the beginning, considering the weight of the child as compared with that of the adult, in which a full bottle is usually administered.

In both instances the serum used was of Gibier's make, the product of the New York Biological Institute. The manufacturers give directions to the effect that the entire contents of one bottle should be used every six hours until improvement sets in. In both cases two bottles were used, and all the serum was absorbed within six hours. There were no rise of temperature, no abscess and no eruption of any character. Immediate improvement resulted after each injection, and this was made more noticeable by the fact that the children were at the worst in the morning. The convulsions therefore appeared in the morning, since the children had received no injection during the night. During the day both children rested well. Their convulsive movements, or convulsions, were the first symptoms that yielded. In addition to the serum, both children were given from ½ to 1 grain of chloral every three hours.

Case 1.—Girl ten days old, parents poor, and consequently their surroundings were not of the cleanest. Umbilicus slightly suppurating, jaws thoroughly locked, inability to nurse, fever, convulsions, etc. On seeing case, one-third of a bottle of serum was immediately used, and this was repeated in six hours. As the last injection was given at 6:30 P.M., the child had no serum until 9 o'clock the next morning, when a further injection was given, and as the improvement seemed marked, only one-sixth of a bottle was given at the next injection. As before stated, two bottles were used. Patient has entirely recovered.

Case 2.—Boy fourteen days old, conditions and symptoms similar to first case. I proceeded exactly as in the first case and obtained the same results. Both patients are nursing again, and were able to begin nursing after three days' treatment.

I have during my practice seen a large number of these cases, which have come both from dispensary practice and a large charity practice among the poor Russian emigrants which I did in my early professional life. Heretofore, I have seen only one case recover. The successful issue of the two cases reported is very gratifying, and certainly will lead me to adopt the same method in the treatment of similar cases.

2814 Clark Avenue.

THE OPHTHALMOSCOPE AS AN AID IN GENERAL MEDICAL DIAGNOSIS.

Read before the Indiana State Medical Society, May, 1897.

BY L. D. BROSE, M.D., PH.D.

OCULIST AND AURIST ST. MARY'S HOSPITAL, EVANSVILLE, IND.

Every man, in the general practice of medicine, is continually meeting with patients whose symptoms are obscure and the question of diagnosis is long unsolved. A careful ophthalmoscopic examination in these cases may at once detect hidden eye lesions that not only serve to identify the general disorder but also furnish us a correct prognosis. Perhaps the relation of a few cases at the outset will make the subject more interesting and impress you with the importance of giving this matter your close attention.

Joseph G., aged 27 years was referred to me by Dr. Edwin Walker. He complains of seeing very poorly, and of headache in the back and sides of the head. The left leg is often numb and there is a pricking sensation to the feet as if his shoes contained pins. The patella reflex is present and the urine negative. The pupils react to light, while the general external eye appearances are normal. With the ophthalmoscope both optic discs are clearly defined but of pale color, indicative of primary atrophy. The blood vessels are normal in size and without discoverable pathologic lesion. Field of vision is contracted peripherally and there is a central scotoma in either eye. He counts fingers at five feet. Diagnosis: Multiple sclerosis.

H. G., a German 38 years old and married, comes with a history of double vision during the past twelve months. He admits having had syphilis nineteen years ago. Patella reflex present. Both pupils strongly contracted and without reaction to light. The left external rectus muscle is paralyzed and both optic nerves are atrophied. With the right eye he sees 15 cc and with the left eye 15 xx. The field of vision shows peripheral contraction with islets of color scotoma for green and red. Diagnosis: Locomotor ataxia.

Mr. L. H., unmarried, 21 years old, was sent to me by Dr. H. T. Dixon, May 23, 1891, because of poor eyesight. He had been at work up to within a few days and was not aware he had any serious trouble other than that of sight. Vision in the right eye was reduced to recognizing hand movements, and in the left eye to counting fingers at eight feet. Ophthalmoscopic examination detected retinitis in both eyes with radiating whitish patches around the macular regions and numerous retinal hemorrhages. Both optic discs were swollen and their outlines obliterated. The urine was highly albuminous with many granular tube casts. Diagnosis: Bright's disease of the kidney. Patient was unable to come to my office again but was attended by his regular physician, death ensuing within three weeks from the time he first consulted me.

F. K., a farmer, was sent to me Aug. 24, 1895, with the history that several months before his eyesight became so bad that he could scarcely read. The vision then slowly improved again but now had relapsed so that patient was advised to consult an oculist. With the right eye he counted fingers at ten feet and with the left eye he saw 15-c. The ophthalmoscope showed both optic nerves swollen, very indistinctly outlined, many small retinal hemorrhages and whitish star-shaped patches around the central zones of vision. The urine was highly albuminous and with a specific gravity of 1010. His physician was advised that the patient had albuminuric retinitis and that in all probability he would die within twelve months. He did not accept our prognosis, but informed the man, who looked in the best of health, that he would treat his case himself and that he might expect to recover his sight. In less than six months the patient died.

C. B., 44 years old, came to see me the first time in 1893, saying he had trouble with his eyes. His general health was not good although he continued attending to his law practice. He has steadily lost flesh during the past two years, notwithstanding his appetite was good. Vision in the right eye 15 xv, in the left eye 15 xl. He was slightly hyperopic and with the correcting lens for this and his presbyopia read Snellen 1 1-11 both eyes. The ophthalmoscopic examination disclosed in both retina, retinitis with whitish patches in the region between the disc and macula. No hemorrhages were discovered, and the outlines of the optic nerves were clearly defined. The urine showed a trace of sugar. Diagnosis: Retinitis diabetica. In 1894 he made a visit to Hot Springs and returned with his vision greatly improved, the whitish patches however had not disappeared. Patient died a year later.

H. H. B., 40 years old, consulted me Jan. 12, 1892, because of disturbed vision in the left eye. With the right eye he saw 15-xxx and with +2.5 correcting his hyperopia he saw 15-xv. Sight in the left eye was reduced to counting fingers at twelve feet. The ophthalmoscope revealed retinal hemorrhages in both eyes with disease of the retinal blood vessels. Patient denied ever having had syphilis, nor has he ever been addicted to the use of alcohol. The urine was free from sugar and albumin. Diagnosis: Retinitis hemorrhagica, due to disease of the retinal blood vessels. Patient was cautioned to give up much of his business and take a prolonged vacation in the early future. Internally, iodid of potash was prescribed. The advice however was not heeded and the vision in the left eye rose with +2,5 lens to 15-lxx. Within a year he had a slight cerebral hemorrhage, followed in another twelve months by a second that terminated his existence.

In our ophthalmoscopic examinations of the optic nerve we recognize two kinds of atrophy. Such as have been occasioned without inflammatory neuritis and hence termed primary or genuine atrophy; and such as have been preceded by swelling of the nerve fibers and other evidences of inflammation and termed consecutive atrophy. The causes of primary atrophy of the optic nerve are to be sought for in disease of the brain or spinal cord, or in disease located in the course of the optic nerve itself, which through injury or pressure has its conducting function interfered with. In general paralysis of the insane, primary atrophy of the optic nerve may occur at a very early period and its significance is then of great diagnostic and prognostic importance. The general nerve appearances are very like those seen in locomotor ataxia. One difference though may at times be found in a slight preliminary cloudiness of the papilla and adjacent retina.[1] Gowers says he has observed this a few times but that much oftener it has been wanting. Reflex rigidity of the pupil may long continue as a prodromal symptom of the disorder. Other eye muscles may very early and in seeming perfect health be paralyzed singly or in groups, which paralysis is often temporary but subject to relapses. The visional field, unlike that in tabes, is apt to show concentric narrowing, with central interference in color conduction. Eye symptoms in multiple sclerosis are often quite characteristic and of the greatest value in establishing a diagnosis. Nystagmus and tremor when fixing an object must be looked for and are occasioned through insufficient innervation of the nuclei of the ocular muscles. Disturbance is found in the peripheral visional field in an irregular narrowing and may be concentric, with central color scotoma that seldom becomes absolute.[2] The impairment of sight may appear at the beginning of the disease and may even remain the sole manifestation of the disorder for a long time. The characteristic is frequent improvement and relapse in keeping with improvement or a growing worse of the patient's general condition. The scotoma may be one-sided, again peripheral, then disappear and reoccur central. The optic disc is changed to a grayish white color, and later becomes excavated so that the lamina cribosa is seen. The disc outlines however remain clearly defined while the blood vessels of the fundus are in general little altered in caliber or course.

The frequency of optic nerve atrophy in locomotor ataxia is variously estimated. Gowers mentions 13 per cent.; Galezowski says about two-thirds of all primary optic nerve atrophies are due to tabes, while Charcot places it still higher and says that in nearly every case, even if spinal symptoms are at first absent, they will appear at a future period. Prof. Uhlhoff, now of Breslau, who perhaps has done more original investigating in this line than any other oculist, says not more than one-half of the cases of primary atrophy are associated with disease of the spinal cord. Ophthalmoscopically we see a gray discoloration of the optic papilla beginning, as a rule, in the outer half; it extends slowly over the entire nerve, which later becomes excavated, so that the meshes of the lamina cribrosa may be seen. The field of vision shows peripheral contraction perhaps in islets or sectors but we especially look for contraction in the outer and upper part of the field. Central positive scotoma hardly ever occur and should make us doubtful of our diagnosis. Disturbance in the color field is important and has a bearing on the prognosis. Where the color narrowing is relatively very much greater than for white, the the disease may be expected to progress rapidly. Conversely, contraction of the color boundaries in keeping with the rest of the field denotes a slowly progressive or stationary disease. There is great disproportion between the visible atrophy of the optic disc and the disturbance of vision.[2] As a rule, however, when the discoloration of the disc is much greater than we might expect from the amount of disturbance of vision, the case is apt to be slowly progressing. The ophthalmoscope may reveal total gray discoloration of the disc although there is hardly any disturbance of vision. Muscular disorders of all kinds occur with great frequency in tabes, and are nuclear or peripheral in nature. In fact every paralysis of an eye muscle, occurring suddenly in a person in health and without an injury, should arouse a suspicion of a beginning tabes, the more so if it recovers in a comparatively short time or subsequently relapses. According to Kahler of Vienna, abducens palsy is the most frequent, ptosis next. Pupillary symptoms are very frequent and of great diagnostic value. Absence of light reaction, followed by loss of reaction to accommodation and convergence, is one of the most characteristic signs of beginning posterior spinal sclerosis. Consecutive atrophy of the optic nerve is the final stage of a papillitis or retinitis and is due to the newly formed connective tissue in and between the nerve fibers, interfering with their nutrition. During the active stage of the disease the nerve head is swollen, its margins obliterated or very indistinct, and the color reddish, approaching that of the fundus. Through mechanical congestion the veins become distended and tortuous, while the arteries are either unchanged or smaller. As the inflammatory symptoms decline the outlines of the disc are again seen, and may grow irregular or even smaller than in health. The color changes to white but the lamina cribrosa remains invisible. The blood vessels now grow smaller and many are enclosed by whitish lines. Intracranial disease, such as tumors, menigitis, brain abscess and cerebral softening from vascular obstruction, is by far the most common cause of consecutive atrophy of the optic nerve. Systemic disease associated with the retention of morbific or toxic material in the blood may likewise occasion optic neuritis. Local lesion in the orbit may cause a unilateral form. Retinitis is in most cases a symptom, the proper interpretation of which will lead to the detection of its cause in some constitutional disorder. To such causative disorders we first place albuminuria, then diabetes, syphilis, blood diseases like leucocythemia and disease of the blood vessels. Retinitis albuminurica is characterized,

[1] Medical Ophthalmoscopy.
[2] Knies: The Eye in General Diseases.

in addition to the common symptoms of retinal inflammation, such as diffuse retinal cloudiness, veiling of the disc outlines and blood vessels with frequent congestion and tortuosity of the same, by white spots or patches of fatty degeneration of the retinal elements and cellular exudate. These white spots are found characteristic in two places, in circles around the optic nerve, or radiating star-like around the macula. Especially typical is the latter stellar-like arrangement of the white spots. Hemorrhages may be found in all parts of the retina, coming chiefly from the retinal veins and capillaries, as shown by the striated appearance of the extravasated blood. Every form of nephritis may give rise to retinal trouble; however it is found oftenest with the cirrhotic or interstitial kidney disease. The relation between the eye lesion and the kidney disease is that the retention of waste matter in the blood sets up a disease of the blood vessels of the eye and as a sequence inflammation and degeneration of the retina. The intensity of the eye lesion bears no fixed relation to the severity of the nephritis nor to the amount of albumin in the urine. On the contrary the eye lesion may improve while the kidney disease is growing worse or the kidney disease improve and the eye lesion grow worse. Nevertheless, retinitis renders the prognosis very grave in albuminuria, and it is a fact that most patients die within one year after the eye lesion has been recognized by the ophthalmoscope. Uremic transitory blindness is a different trouble than the one we have just considered and is accompanied by vomiting, convulsions and the general symptoms usually present in uremic poisoning. Retinitis diabetica is, following Hirschberg,[3] best depicted under two principal types. Where we find whitish spots in the retina lying between the upper and lower temporal branches of the central artery and to the temporal and nasal side of the optic nerve. As the patches enlarge they become striated or crescent shaped. The star like patches as seen in albuminuric retinitis are never present without the urine contains albumin as well as sugar. Likewise in and around the white spots do we note the absence of pigment degeneration which is so common in syphilitic retinal trouble. Small hemorrhagic points, lines or spots may be found in all parts of the retina and even a hemorrhagic spot may rest upon one of the whitish exudates. The fact that the hemorrhages do not overstep a certain degree of severity is characteristic. The hemorrhages may undergo reabsorption, but Hirschberg says he has never seen the whitish patches wholly disappear, notwithstanding improvement in vision and the general symptoms. The absence of diffuse retinal cloudiness and the non-involvement of the optic disc with veiling of its outlines, are of great value in differentiating this trouble from albuminuric retinitis.[2] The second type of the disease is the purely hemorrhagic, spontaneous hemorrhages occur and are due to sclerosis of the blood vessels, not only in the retina but in the brain and other parts of the body, Subconjunctival hemorrhage in an apparently healthy person may have a connection with diabetes; likewise a chronic and persistent inflammation of the eyelids. Hemorrhage into the vitreous may happen with or without hemorrhagic glaucoma diabetic in origin. Cataract is a frequent accompaniment of diabetes in both the young and the old. In addition, diabetics have trouble in accommodation and require frequent changing of their reading lenses and a strength out of all proportion to their presbyopia. A very rapidly developing myopia without lens opacity is sometimes found in persons long past middle life. While our purely hemorrhagic type is less characteristic of diabetes than is our exudative, its prognostic value, so far as the preservation of sight and even life is concerned, is more grave. Hemorrhagic retinitis independent of diabetes and albuminuria or alteration of the qualtity of the blood, but associated with vascular derangement such as general arterial sclerosis or endarteritis need interest us here only for the unfavorable prognostic value it has upon the patient's life expectancy.

[3] Deutsche medicinische Wochenschrift, No. 51, 1890.

REMARKS ON OTITIS MEDIA AND OTITIC SYPHILIS, WITH REPORT OF A RHINOLITH AND AN ACCESSORY TOOTH IN THE NOSE.

Read before the South Carolina Medical Association at Union, S. C., April 26, 1897.

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CHARLESTON, S. C.

The etiology, symptoms and pathologic changes of an ordinary case of acute suppurative inflammation of the middle ear are more or less familiar to us all. The formation of pus in the tympanic cavity is usually followed by rupture of the drumhead and the discharge heralds an approaching sure and speedy recovery if drainage is free enough to permit the early exit of the pus. Such a case, free from complications, pursues a regular course and tends under careful hygienic and rational treatment, to spontaneous cure. Often, however, we meet with cases when for some reason the tympanic membrane does not yield to the pressure and the pus after invading the mastoid antrum and cells, may have to seek another outlet. The Eustachian tube, the natural ventilator of the middle ear, rarely serves as a drainage tube on account of the closure of its small lumen from inflammatory swelling, originating usually in the naso-pharynx. In such cases the bony tissues are necrosed and the pus seeks an outlet in the cranial cavity or some of the venous sinuses or arteries passing in close proximity to the attic. Again, after rupture of the drumhead the opening may not be large enough to permit free drainage and the tympanic mucous membrane being constantly bathed in a septic purulent fluid becomes subject to polypoid degeneration; and for this or other reasons the discharge becomes chronic. It is to two of these complications that I invite your attention with illustrative cases.

W. E. N., aged 24, of Dock, S. C., consulted me by advice of Dr. Steele, on March 11, 1897, for deafness in and a chronic discharge from the right ear. Two months previously he suffered from an attack of grippe with violent pains in both ears. The right began to discharge ten days after and had not stopped since. In the interval he had recurrent attacks of severe mastoiditis. On examination the skin over the mastoid was found swollen, boggy and painful on pressure. Hearing was reduced to two thirty-sixths in the right ear and the external canal was closed by a soft fluctuating tumor with a fistulous tract opening on its surface. The drumhead, not at first observable, was subsequently found intact. The fistula communicated with the mastoid cells and the bony canal was considerably necrosed. A free incision was made through the tissues of the external auditory canal and the tract and adjacent diseased bone thoroughly curetted and packed with iodoform gauze. Free drainage was thus established and three weeks after, the patient reported his hearing and his ear normal in every respect.

This case illustrates the necessity of an early paracentesis of the drumhead in cases of acute purulent otitis media when the usual local antiphlogistic measures fail to give rapid relief from the pain, or to cause a disappearance of the other symptoms. In such cases as the above, the early establishment of free drainage by myringotomy will prevent mastoid and other complications of a serious and often fatal and intractable nature.

As illustrative of another common complication of suppurative otitis media we have those cases in which the drum membrane is perforated and a train of symptoms is set up, the most prominent and annoying of which is an offensive and irritating discharge caused by the opening being too small to permit the exit of the purulent secretion collecting in the middle ear.

F. A. B., aged 25, of Sumter, S. C., consulted me by advice of Dr. Archie China, in November, 1896, in regard to a chronic fetid discharge from the right ear, which had existed for about twenty years, in fact as long as he could remember. During this time he had been subjected to a great variety of treatments at different hands, among them being the galvano cautery. His hearing was reduced 0.36 and bone conduction was considerably impaired. On examination, a small opening was found in the postero-inferior segment of the drumhead and closing it, was what seemed to be a polypus or granulation. The membrane looked very tense and the discharge was free and offensive. Suspecting a polypus of too large dimensions to protrude through the perforation, the latter was enlarged and a tumor of unusual size presented. This was extracted with an aural snare, under a 20 per cent. solution of cocain. The patient returned home and was directed to use only a peroxid of hydrogen solution, to inflate the ear with Politzer's air bag, and after thoroughly drying the canal to insufflate dry boric acid. In three days he reported the discharge cured and there has been no return since; the same treatment, however was continued for some time.

In all cases of chronic discharge from the ear, when thorough cleanliness and appropriate local and general treatment fail to stop it, a very careful examination should be made for some exciting cause. Such causes are polypi, necrosis of the ossicles or bony walls of the attic, cholesteatomatous masses, foreign bodies or diseased conditions of the nasopharynx producing sepsis through Eustachian tube. In children, the most common cause is adenoid growths and their removal generally suffices to cure the disease.

The following history describes a variety of otitic syphilis which is no doubt very commonly overlooked and of which very little has been written:

M. C., aged about 22, consulted me on Jan. 27, 1897, at the request of Dr. Dawson. With no previous history of ear disease he had suddenly become perfectly deaf in both ears. The left one subsequently discharging a fetid purulent secretion. A short time before I saw him he began to have ringing noises in the head and at the same time had marked attacks of vertigo, while his gait was so staggering that he was unable to walk out of the house unassisted. Complete facial and partial paralysis of other portions of the body occurred simultaneously. Both drum membranes were congested and the left perforated by a small opening. Double vision was occasionally present. Both air and bone conduction were almost completely abolished. He gave an obscure history of syphilis, which was subsequently confirmed by other clinical evidences of the disease, as well as by the report of his physician. Under heroic antisyphilitic treatment, including subcutaneous injections of mercury in large doses and iodid of potash internally, as well as local treatment of the ears, he is now able to hear loud conversation in the left ear at one foot, and the loudest in the right, with difficulty.

Dr. E. A. Crockett, in the Boston *Medical and Surgical Journal* of Feb. 11, 1897, under the title, "An Acute Syphilitic Affection of the Ear," details the history of several similar cases in which he found the injection of pilocarpin in the acute stage, in conjunction with antisyphilitic treatment, of great and even specific value. He concludes from a study of some fifteen or twenty cases that effusion into the labyrinth is the cause of this particular group of symptoms we are considering, and that very sudden and severe deafness, marked vertigo and violent tinnitus in persons free from ear trouble should always suggest otitic syphilis.

Your attention is also invited to two somewhat rare and unique growths occasionally found in the nasal fossæ, only a limited number of which have so far been reported in rhinologic literature. The first is an accessory tooth which I extracted from the left nasal passage of an adult, aged 29, who consulted me for a chronic discharge from the nose. The tooth, evidently a canine, was firmly imbedded about midway between the anterior and posterior openings, in the mucous membrane covering the bony floor formed by the hard palate. Its presence was a great surprise to the patient and its removal was followed by a rapid amelioration of the symptom complained of.

The second is a rhinolith or nasal stone removed from the left nostril of Mrs. H. C. R., aged about 45, who consulted me for deafness. She mentioned incidentally that she had suffered for upward of twenty years from a fetid discharge from the left side of the nose and from a chronic stricture of the lacrymal duct, both of which she considered incurable. In the course of a routine inspection of the nose as a part of the aural examination I detected a large rough irregular stone firmly lodged in an old suppurating ulcer just at the lower end of the tear duct. These rhinoliths are usually formed by the deposition of calcium phosphate around some forgotten foreign body as a nucleus. From the history of this case, as well as the shape of the stone, I judge that the exciting cause was a piece of necrosed bone from a diseased tooth extracted years ago. The annoying discharge ceased shortly after the removal of the foreign substance. As a predisposing cause of the chronic otitis its effect is somewhat doubtful but there is no doubt that it was the original source of the dacryo-cystitis and lacrymal obstruction.

THE TRAUMATIC FEVERS.

Read in the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

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One of the earlier theories of disease was that it came from without, as a direct visitation from God: later, that it originated in the humors of the blood; in modern times the cell doctrine has had its sway, to be supplanted as the microscope increased in power by the bacterial origin of disease, rapidly supplemented by the hypothesis that the products of the bacteria, the ptomains and leucomains, are in many cases the active media, while the more recent investigations of serum therapy seem to foreshadow a partial return to the humoralistic theories. It was only in 1851 that Meigs declared that puerperal fever was a fatality of God's providence; so that whatever the actual truth of our modern speculations may be, there is no pathologic process upon which they have had a greater effect in modifying our methods of treatment, in teaching us how to avoid their transmission, and in one of them (pyemia) in practically stamping it out, at least in its most virulent epidemic form, than in the class

of diseases which we have the honor of discussing before you.

It is not so many years ago since we were taught by the too enthusiastic imitators of Lister, that any rise of temperature following an operation indicated infection. The most careful preventive measures with assiduous microscopic investigation has tended to dissipate this view; at the present time a moderate rise of temperature is not regarded as a reflection upon the surgical cleanliness of the operator, and it has been found by experiments upon the lower animals, that under the most careful asepsis, "*a something*" from a sterile wound, injected into a healthy animal, will bring about a rise of temperature, which "something" for the want of more definite knowledge, is called an "aseptic fibrin ferment" and therefore is supposed to be the element which being absorbed from an uninfected wound in the human animal, produces the increased heat. We would classify our traumatic fevers as *primary fevers* and *secondary fevers*.

PRIMARY FEVER.

Primary or aseptic fibrin ferment fever appears usually within forty-eight hours after a traumatism of any magnitude, being due to the absorption of an aseptic fibrin ferment substance from the seat of injury. It follows conditions in which the aseptic precautions or unbroken skin preclude infection, such as contusion, fracture, effusions into synovial sacs or membranes and in carefully cleansed open wounds, and is due to the absorption of pyretogenetic substances formed from the products of the aseptic necrobiosis.

It lasts from four to five days; with moderate rise of temperature (102), increase in the rate of pulse and of the respiratory rhythm, the urine more highly colored than normal, some tendency to constipation, but with little or no sense of discomfort to the patient. It is to be treated by absolute rest, limited diet, a purgative on the second day, an alkaline febrifuge, or moderate dose of quinin. It is not a condition that need give the operator any anxiety.

SECONDARY FEVER.

Secondary fever which comes on after the fifth day, though in virulent cases it may appear even sooner, is due to the absorption of pathogenic germs, either the pyogenic, the saprophytic, or their products, so that we may classify their varieties as follows. 1. Suppurative fever, acute or chronic. 2. True septicemia. 3. Sapremia. 4. Pyemia.

Acute suppurative fever.—Acute suppurative fever follows infection with the products of pyogenic micro-organisms and is manifested by a chill, fever and sweat usually coincident with the formation of pus. Although the appearance of such symptoms is a most valuable indication of the presence of a purulent collection which will usually promptly disappear when the pus is thoroughly evacuated and the cavity kept well drained, they may not occur though the pus may have accumulated in considerable quantities and for a considerable length of time, *until the cavity is opened*. It was formerly thought this was due to the admission of air. This is not so. The apparent paradox depends upon the conditions favorable or unfavorable to the absorption of the pus products.

In a paper entitled "Intermittence in Disease," I endeavored, some years ago, to show that the regular rhythmic appearance of phenomena in health or disease were due to impressions upon the nerve centers, pus absorption at times having the intermittent type of an ague, and being often mistaken therefor. When the pus collects rapidly and is not too large in quantity, the absorbent lymph or venous channels being active, the symptoms will appear quickly. Where however, the pus collects slowly and there is marked infiltration and pressure upon the surrounding tissue, thus interfering with the absorption, no symptoms will be evident excepting perhaps the initial chill, fever and sweat, which is often forgotten, but as soon as the cavity is evacuated and pressure relieved the absorbants regain activity, take up the infiltrated products which can not be readily drained out and we at once have the familiar symptomatology. The apparent paradox is thus made clear and there is no inconsistency.

Acute suppurative fever is believed to be due to the products of the pus and not to the actual presence of the pus-organism themselves, because the actual presence of the pus germs has not been demonstrated in the blood, and because the symptoms disappear so quickly after thorough cleansing and drainage.

The chronic form of suppurative fever with characteristic rhythmic temperature chart, "up at night and down in the morning," with flush of cheek and wasting of flesh, is called *hectic*.

Septicemia.—Septicemia (true septicemia, septic infection) is due to the absorption of the saprophytic or micro-organisms of putrefaction with their actual presence in the blood in enormous quantities.

The symptoms are, an initial chill (one only), a continued fever, rapid pulse and respirations, coma, sordes on the lips, a dry cracked tongue, mental hebetude, muttering delirium, with enlargement of the spleen and of the superficial lymph glands. The wound, if upon the surface, will often appear gangrenous and emit a foul odor.

The treatment consists in rigid local asepsis (although the disease when fully developed has already gone far beyond the point of infection), with most vigorous supporting measures, with liquid concentrated food, quinin, whisky, ammonia, digitalis, and strychnin, the amount of stimulus in the way of brandy or champagne without intoxication being somewhat surprising. Fortunately, true septicemia is much more rare than we might suppose. as the term is misapplied to a variety of conditions often including our next sub-division.

Sapremia.—Sapremia (toxemia, septic intoxication, ptomain poisoning) is the absorption of *the products* of the micro-organisms (ptomains) from the site of infection. It predicates, therefore, a primary local invasion with saprophytic germs and an absorption of their products. It is evident that while true septicemia emphasizes the actual presence of bacteria in the blood itself, sapremia depends largely upon the limitation to the point of introduction and the destruction of tissue there, while this disease is due to the absorption of the products from the original point of infection. An infection sufficiently virulent to introduce the bacteria directly into the blood would cause true septicemia, but if the tissues had sufficient resiliency to prevent this the infective agency might still remain *in loco*, producing by its action on the tissues ptomains which, being absorbed, produce sapremia.

Sapremia is often ushered in with a single chill followed by fever and sweat, tenderness and pain at the infected spot, or if the wound be under observation it will appear swollen with inflamed edges and covered

by unhealthy granulations. The severity of the symptoms largely depends upon the degree of toxicity and activity of absorption in and about the affected area. The skin is hot, the pulse and respiration rapid, tongue dry and thickly coated, urine scanty and highly colored, patient restless with a mild delirium. This will last for four or five days and the symptoms gradually subside.

The older authors were glad in such conditions to see the surface of the wound covered with what they called "laudable pus" and to find healthy granulations. We now know that this betokens a power of resistance of the tissues, a throwing off of the bacterial products and consequent lessened absorption.

It is in obstetric practice that this form of disease is too often found. The odor of the lochia, the tenderness over the uterus, with the general symptoms appearing about the fourth day after delivery, give us warning of infection. The lesion being in great part local, a thorough cleansing with frequent douching will at once ameliorate the symptoms and shortly, if taken in time, the constitutional involvement will also rapidly lessen. In fact, the whole course of sapremia emphasizes the local element, and to local treatment we must look for its removal.

In certain lamentable cases the disease is not recognized in time but is allowed to go on until the patient is overwhelmed by the ptomain poisoning, death occurring from the profound typhoidal depression. We can not too strongly emphasize that the localizing symptoms point to radical local antiseptic treatment. In the obstetric practice referred to, a good douche of bichlorid of mercury will often evert a most threatening condition, but if this is not sufficient a thorough curetting of the uterus, afterward swabbing with tinct. iodin, may be necessary.

Especially after miscarriage the patient may be in ill health for months, with subinvolution of the uterus; apparantly caused by minute shreds of decomposed membranes or clots readily removed by the means indicated, and we believe some of the cases of tubal disease might be prevented by a recognition of the pathology of the ptomain poisoning of which we are now speaking.

The constitutional condition requires a stimulating and supporting therapeusis and regimen.

Pyemia.—There are very few terms in surgery so confusing as the name pyemia. It has been used by different authors to include all the varieties of traumatic fevers referred to, while it is recognized that some of the symptoms were only seen in rare cases. It seems to me we can safely restrict the terms to a distinct disease characterized by a state of depression common to all typhoidal conditions but distinguished by the formation of pus cavities in different and widely separated parts of the body. No tissue may be exempt. Abscesses have been found in the lungs, liver, kidney, joints, muscles, bones, brain, lymphatic glands; coagulability of the blood is diminished, and there is leucocytosis with purulent effusions into the serous cavities. The disease is contagious, being communicable by instruments or sponges in the hands of the surgeon or other attendant and passes along the vascular or lymphatic channels.

It is evident that there is here something different from what we have denominated true septicemia; the constitutional involvement being even more grave and the metastatic abscesses being added thereto.

There is here surely a double infection, the micro-organisms of putrefaction and of pus both being introduced directly into the blood, and the latter proliferating wherever they happen to lodge. It is this double infection which induces the grave constitutional conditions while the local presence of the pyogenic germs causes the abscesses. Fortunately such a combination is rare under the existing antiseptic methods.

The symptoms appear about the second week after an injury. The are, repeated chills and colliquative sweats, the temperature rising synchronously with the chill, the pulse and respiration rapid and weak, with skin icteroid, anorexia, more or less diarrhea, great prostration, and great pain at the immediate seat of the abscess, with hyperesthesia of the cutaneous surface, and erythematous rashes and ecchymoses; the mind being clear unless metastatic masses lodge in the brain.

We can differentiate it from true septicemia by the mental clearness, the hyperesthesia, the repeated chill (half a dozen a day) and excessive exhausting sweat, and the localized abscess.

From intermittent fever we may separate it by the limitation of the paroxysms in the intermittent to a certain day or even hour, by their singularity as a rule, and by the regular succession of the three stages of chill, fever and sweat; compared with the many paroxysms without definite rule throughout the day in pyemia and the fever stage coinciding with the chill and quickly followed by the exhausting sweats. It is thus seen that pyemia, though accompanied by high temperature has no distinct fever stage, the rise of temperature coinciding with the chill. The sweat rapidly follows.

The treatment is supporting and stimulant with early evacuation of abscesses where accessible. Antisepsis and asepsis has almost abolished this dreadful disease, which in former times was indeed "the opprobrium of surgery."

Arterial pyemia, so-called, is an entirely different condition, being non-infective, depending upon the lodgement of an embolus detached from a fibrinous white thrombus in the left ventricle, in some distant organ. The term should be abandoned.

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DISCUSSION.

Dr. GEORGE M. STERNBERG of Washington—It seems to me that if pyemia is the result of septicemia you must have your septicemia in the circulation generally distributed in advance of your multiple abscesses and when the abscesses are formed you then have a suppurative fever. I know that pyemia is recognized as a distinct disease, but to me it seems to be a sequela of septicemia.

Dr. E. W. HOLMES—That question involves a very large question which the pathologist must settle. It depends upon the question as to which germ produces pus. It is quite possible that the germs that produce sapremia may be the same germs that produce the pus condition, but on the other hand I do not think that Dr. Sternberg is prepared to say that every condition in which pus is produced in the body produces pyemia. So far as we now know if such a condition exists it is simply because we are not yet straightened out as to the exact condition in which pyogenesis may be produced.

A Cause of Myopia.—The prevalent doctrine that myopia, astigmatism and kindred disorders depend upon the physical fatigue of the eye leads us to the consideration of the size of the type used in reading, rather than the intensity of the illumination of the printed page. No type less than 1.5 millimeters in height should leave the case. Ordinary daylight, white rather than yellow for artificial illumination, and white rather than tinted paper round up the advice.

LIGATION OF THE DORSAL VEIN OF THE PENIS FOR FUNCTIONAL IMPOTENCE, WITH A REPORT OF FIVE CASES.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

BY J. A. MURRAY, M.D.
CLEARFIELD, PA.

In reporting these few cases to the ASSOCIATION I am not presumptuous enough to claim priority of discovery for the operation. Surgery has advanced so far that, apparently, there are few operations that some one has not done in the recent or remote past. So with this, it may have been done by many surgeons and abandoned. I have seen no literature on the subject, pro or con. If there should prove to be any virtue in the operation I desire to say that I got the idea from the Materia Medica of Dr. Bartholow, in which these words are used: "It has lately been asserted that deficient erections and loss of the capacity for coitus are not infrequently due to enlargement of the dorsal vein of the penis and consequent too rapid emptying of the veins of the erectile tissue. Acting upon this plausible suggestion, the author has practiced the hypodermic injection of ergotin about the dorsal vein of the penis and has had apparently excellent results."

I have operated on only five cases, four of which were followed by a permanent cure, the other being a complete failure because it was unsuitable for the operation.

From this small experience I am encouraged to believe that when functional impotence is due to an enlarged dorsal vein in men with strong sexual desire, who fail in sexual intercourse on account of imperfect erections due "to too rapid emptying of the veins of the erectile tissue," ligation offers good prospects for a permanent cure.

In neurasthenic cases when the genital organs are small, pale, flabby and relaxed from excessive masturbation, with no sexual desire, the operation would be unavailing, and therefore contraindicated.

I submit a brief history of my five cases, hoping those with larger opportunities in this direction will try the operation on suitable cases and report their success or failure through the columns of the JOURNAL OF THE ASSOCIATION.

Case 1.—A merchant 63 years of age, well preserved, hearty and robust; strong sexuality, during his whole life indulged a great deal in sexual intercourse, some times excessively; father of several children. One year ago married his second and present wife, a strong, healthy, active young woman, 22 years of age. On the first attempt at coitus he met with his usual former success, but the night following this when he attempted intercourse the erection was feeble and lacked intromittent power. Each succeeding attempt for a period of three or four weeks was also a failure; then his condition began to prey upon his mind. Ashamed to consult a home physician he flew to the different "lost manhood restored" advertisements and tried some of the most glaring and reassuring, and was swindled alternately. Then he went to some distant sanitarium and was treated some time with no better results. He was next worked by some medical company who sold him some sort of a suction apparatus for "restoring weak and flabby erections in men with waning power and resultant impotence."

But after all his treatment and instrumental manipulations his condition was worse than in the beginning. At this stage he drifted into my care, impatient and despondent, having given up all hope of regaining his former virility.

I made a thorough examination and found well-developed genital organs; never had gonorrhea nor masturbated to any extent; no stricture; no sensitiveness in the prostatic urethra nor at the neck of the bladder. The only abnormal condition was a very large and tortuous dorsal vein. I advised the injection of ergotin, to which he readily consented. I continued this for three or four weeks and his condition improved somewhat, but his erections were still feeble and unsatisfactory and the organ was swollen, discolored and tender from the injections and I abandoned them.

It was at this juncture it occurred to me that if the constringing influence of ergotin was beneficial why not get an immediate and permanent result by ligature. I examined a long line of text-books but found no enlightenment on the subject; nevertheless I concluded to attempt it, as the patient was anxious to try any measure that held out some hope of cure.

The penis and surrounding parts were thoroughly disinfected and the operation done aseptically under the anesthetic influence of a hypodermic injection of cocain. A short longitudinal incision was made through the skin and subcutaneous tissue, down to the dorsal vein, which was then picked up and ligated in two places, and then cut between the ligatures. The first ligature was scarcely tied till the penis began to fill up and before I had completed the operation he had a powerful erection, which alarmed both him and myself. The organ was so distended and engorged that it was cyanotic in appearance and apparently the smallest capillaries in the glans stood up prominently. Crushed ice was applied constantly; bromids and other depressant remedies were administered. Notwithstanding this, during a period of three days and nights he experienced a constant, powerful and painful erection. Subsequently it partially subsided, but on the slightest manipulation it would become strongly erect, this latter condition existing until the ligatures came away on the fifth and sixth days. In a few days the wound closed. He was so self-confident and enthusiastic that he begged me to allow him to have intercourse with his wife on the tenth day after the operation. I positively refused to consent until two weeks more, but the strain was too great for him and on the fourteenth day he cast my advice to the winds and had coitus with his wife twice and once on the succeeding day. Since that time, which is almost three years from date of operation, coitus has never been attended by failure. He has one child by his young wife and to this day is one of the happiest of men.

Case 2.—A clerk, 27 years of age, had practiced masturbation from his fifteenth to nineteeth year. Following this he very frequently toyed with one young woman for a period of more than two years, without any gratification of his sexual desires. At the age of 22 he attempted intercourse but failed because the erection was imperfect. He made several subsequent attempts with a like result, because the intromittent power was always wanting. He then consulted me and I found a stricture, caliber No. 19 French, four inches from the meatus, in addition to an extremely tender urethra, especially in the prostatic portion. He denied ever having had gonorrhea. I treated the stricture by gradual dilatation, sedative medication and cold douches to the perineum, and later by iron and bitter tonics. I forbade libidinous thoughts, lascivious associations or any attempt at sexual intercourse during my treatment. After three months I gave him permission to have connection, with instructions not to dally or toy with women but to select one with whom he could have coitus on first appearance of an erection. Like all previous attempts this one failed also. The desire was there but the glans penis would not entirely fill up, remaining soft and unelastic. He came back disheartened and despondent and I suggested ligating the dorsal vein, which appeared rather larger than normal. He readily agreed and under cocain anesthesia by hypodermic injection I ligated the vein as in the foregoing case. The first ligature was no sooner tied than the glans penis began to distend and it was only a few seconds until he had a powerful erection and I feared a repetition of the symptoms of the first case. The patient was immensely pleased with the result and the mental effect on him was self evident.

The penis was loosely bandaged and the patient put on large doses of potassium bromid. In the course of a hour the erection partially subsided and he suffered no more pain. In dressing or upon the least manipulation the organ would become powerfully erected. Upon the sixth day the ligatures came away and the wound soon closed, and it was only a few days until the young man was very anxious to try his powers, feeling very confident he would not again fail.

He was so certain of success that I gave him permission on the fifteenth day to have intercourse but once. He came back in two days the most elated young man I have seen, stating that he had had coitus with a young woman five times in two days. He is married now and he lately told me his erections have always been satisfactory since the operation, which is more than two years ago.

Case 3.—A tanner, 25 years of age, married. He practiced

onanism from his seventeenth to his twenty-first year, but not excessively. Has strong sexual desires. Fondled with the object of his affections for more than two years before marriage without any gratification of his passions. Has never had sexual intercourse but frequently experienced nocturnal emissions. Married ten days ago and has not been able to consummate the marriage rite because the erections were feeble and lacked in intromittent power. By careful examination no stricture was detected but there existed a very hyperesthetic condition of the urethra, especially sensitive in the prostatic portion. A steel sound was passed twice a week for a period of twenty-one days, and he was instructed not to fondle his wife nor occupy the same apartment with her.

At the end of three weeks, the hyperesthesia of the urethra had been very much improved; I ligated the dorsal vein, although it was not enlarged. He was strictly enjoined not to attempt coitus for another month. At the expiration of this time intercourse was performed successfully and he has never experienced any difficulty since that time, now more than a year ago, in commanding an erection,

Case 4.—A bookkeeper, 31 years of age, who had masturbated for 7 years, on an average of twelve times in a week. Three years ago he abandoned masturbation and has since suffered from frequent nocturnal emissions, although he had not experienced an erection for many months and had no desire for sexual intercourse. His genital organs were small, pale and flabby. He was anemic, weak and neurasthenic. He had read "lost manhood restored" literature until he believed he could never be cured. I was convinced of that, but did not express it. He was a typical sexual hypochondriac.

On examination I found a stricture, caliber 18 French, four and one-half inches from the meatus, in addition to an extremely sensitive urethra, especially about the neck of the bladder. Under gradual dilatation the stricture and sensitive urethra were cured. With tonic treatment, cold douches to the perineum and good hygiene, his nightly emissions ceased in number and his confidence was somewhat restored. Although he was not a proper case for operation, I ligated the dorsal vein, more for the mental effect I hoped it would have than any hope of permanent cure. His condition did not improve. The bad habits of his past life so preyed upon his mind that he became more gloomy, disheartened and despondent. He drifted out of my care and left the community, therefore his subsequent history was lost, but I feel satisfied the operation did him no good.

Case 5.—School teacher, 25 years of age, unmarried; had practiced masturbation from his fifteenth to his nineteenth year; suffered some from nocturnal emissions; has well-developed genital organs. No stricture, no hyperesthesia of urethra. He had attempted coitus on frequent occasions but they were all attended by failure on account of feeble erections. He was in robust health and had strong sexual passions. Was engaged to be married in a few months but his impotent condition so preyed upon his mind that he was on the eve of breaking the engagement when he consulted me. The dorsal vein being large and prominent I suggested ligating it and explained the theory. He readily consented and the operation was performed. I warned him against dallying or toying with women and advised him to marry his betrothed at once. He did so and all attempts since then at sexual intercourse have been crowned with success.

In conclusion I wish to state that under proper treatment, long continued, Case No. 3 would, I believe, have recovered without the operation. In the foregoing cases, excepting No. 4, the mental effect of the operation was simply wonderful. They felt positive they were cured and wanted to try their powers at once. Two of them were restrained with difficulty. We see so many cases of impotence due only to a fear of sexual incapacity. If we can restore confidence in this class of patients there is very little trouble experienced in establishing a cure, and I am inclined to believe a great many cases of psychic impotence can be cured by ligating the dorsal vein of the penis.

London's Growth. — Returns show that over 1,200 houses are erected monthly and from August 1896 to August 1897, 14,591 houses were built. Alterations and additions are not noted.

GANGRENE OF THE FOOT DUE TO UTERINE MYOMA.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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The case which I am about to report is so unique in my experience, that I deem it worthy of publication.

Mrs. M. came to the Maine General Hospital with the following history: During the fall of 1895 and the early part of the winter of 1896 the patient suffered from severe cramps below the knee. It was mostly after sitting for a long time or after sleeping at night. In March, 1896, a slight cold was taken and she suffered much pain, which seemed like the pain of rheumatism. She soon became lame and suffered more pain in the limb, which could be relieved for a time by the application of dry heat. In the early part of June, the limb was so painful and lame that she was obliged to lie in bed. The limb became badly swollen and in the middle of June the weight of the body could not be borne upon it. The sharp pain had changed to a burning sensation and the limb had a heavy "blocky" feeling. The limb was very cold, but when heat was applied she could not feel it. At this time the pain was so severe that sleep was an impossibility. The 3d of July she had what her daughter called a shock. There was complete prostration for several hours. It was three or four days before the feeling of numbness passed away.

At this time the foot was badly swollen, purple spots appeared, as if the foot was cold; these spots would disappear by rubbing and the natural color would returu. By the middle of July the top of the foot was discolored and water blisters appeared. The burning sensation was very severe, the blisters increased in size and number while the toes were very cold and seemed dead.

This condition continued to increase until two thirds of the foot became gangrenous. In the latter part of July, 1896, I saw the patient in consultation with the attending physician. She was a woman 47 years of age, fleshy, and had had one child, daughter, about 20 years old. She had enjoyed good health up to the time of this sickness. There was no disease of the kidneys, and no evidence of arterial degeneration.

On examination I found, what her physician had discovered some time before, a fibroid tumor of the uterus, rapidly growing, with thick and rigid abdominal walls pressing the tumor firmly against the iliac vessels. It was the right foot that was gangrenous, and the history showed that she was most comfortable when lying on the right side, and this was the position which she had occupied the most of the time while in bed. The case seemed well nigh hopeless. The woman was weak and almost helpless from her long sufferings, the tumor of the uterus was large and rapidly growing, the gangrene, while not rapidly extending, had destroyed nearly the whole foot. In this condition she was brought to the Maine General Hospital, Aug. 3, 1896, as my private patient. She was kept in the hospital one week before the operation for rest and preparatory treatment. At this time two-thirds of the foot were dry and mummified and the line of demarkation was well-formed.

August 10, one week after her admission to the hospital, I removed the tumor including the uterus and its appendages. The patient made a rapid and uninterrupted recovery from the hysterectomy, and in two weeks from the first operation, I amputated the leg at the junction of the middle with the lower third by Teale's method. This wound healed promptly by first intention without a drop of pus or a blush of redness. She left the hospital in five weeks from the time she entered, with the wounds entirely healed and rapidly gaining in strength. In about three months after she went home she was fitted with an artificial limb, and at this time, nine months after the operation, is entirely well.

As this was the first case of the kind I had ever seen I was anxious to know what had been the experience of other surgeons, consequently I wrote to the National Bureau of Medical Bibliography at Washington, and received the following reply:

WASHINGTON, D. C., Feb. 26, 1897.

Dear Sir:—In response to your letter of the 18th inst., we send you herewith reports of all the cases of gangrene of the lower extremities resulting from uterine fibroids that we have

been able to find. We made an exhaustive search through all the literature of gangrene, cases of, and tumors, uterine, complications of, without finding any additional cases."

Pott's Gangrene from Ovarian Tumor.—Dr. Henry Fitzgibbon. (*Brit. Med. Jour.*, Lond., 1876, I, 116.) Dr. Fitzgibbon gave the history of a case of Pott's senile gangrene which had run to an unusual course; and exhibited the specimens. A female, upward of 70 years of age, was admitted into hospital in March, 1875, with gangrene of the fourth toe of the left fort. The case presented the usual symptoms of the disease as described by Pott. Her bowels were constipated, and there was a tumor in the left iliac region, which was believed to be due to an accumulation of feces. Treatment based upon this diagnosis produced a marked diminution in the size of the tumor. The disease extended in the foot (which, however, preserved a higher temperature than the unaffected one) to the ankle-joint, when suddenly the pain ceased, and the foot recovered, the toes alone becoming mummified, and consequently separating. It was ascertained that the abdominal tumor, which was still perceptible, had an old history; and the patient informed Dr. F. that she had been under treatment some years previously for an "uterine tumor." She was discharged in good health after being six months in the hospital. Five months subsequently she was readmitted. Her whole foot then looked gangrenous; the disease extended rapidly up the limb; she had black vomit, great abdominal pain, and died. A large densely fibrous tumor of the left ovary was found lying on, and pressing upon, the common iliac artery. The heart and vessels down to the line of demarkation, which had formed midway between the ankle and the knee, were healthy. Below this there were some plates of atheroma in the posterior tibial artery. Dr. F. believed that the circulation in the left lower extremity had been interfered with by the pressure of the tumor on the iliac artery, which was increased by the accumulation of feces also exerting pressure in the same direction. The removal of the latter factor by treatment allowed the partial recovery in the first instance; and a recurrence of pressure from a reaccumulation of feces, occasioned, he considered, a recurrence of the disease.

Gangrene of Leg; Polypus Uteri and Removal; Amputation.—J. Cooper Forster, M.D. Guy's *Hosp. Rep.*, London, 1875, 3, S, XX, 79.) Mary B., aged 45, widow, was admitted into charity ward on Dec. 31, 1873. Family history good, always had good health. Fourteen days ago, in the night, her foot got cold and ached; next morning all the toes of that foot were quite white and cold; she used a liniment and wrapped the foot up in warm flannels. In eight or ten days the toes began to get black; this spread along the foot and up the leg. She has not been exposed to great cold, but generally loses a large quantity of blood when menstruating.

On admission.—Is delicate looking; the toes, dorsum of foot, and front of lower half of right leg, are quite black and cold, and she has very little feeling in those parts; femoral artery normal. She has also a large growth occupying the region. Leg dressed with carbolic acid and wrapped in cotton wool.

January 8. Chloroform given. Dr. Phillips removed a polypus which was attached to uterus near os. It was very nearly as large as the head of a fetus, and was cut away by scissors; no bleeding.

January 19. There is a well-marked line of demarkation on leg; the gangrene has not spread since she came in, but there is some discharge from it.

January 20. I amputated through the knee-joint; anterior and posterior flaps made; Esmarch's bandage used; scarcely any bleeding.

January 23. Stump dressed under spray; then wrapped in gauze soaked in carbolic oil and a back splint applied; there is rather a free discharge.

January 28. Dressed as before. Stump has begun to slough. She suffers from cough and expectorates a good deal of thick mucus.

February 6. Now has a bed-sore on right buttock, about 4 inches by 3 in size, and filled with slough; lies on a water bed. Discharge less and of a healthy kind.

March 3. Stump nearly healed, bed-sore looking better, sits up a little daily.

March 9. Two other bed-sores appeared. No albumin in urine, appetite bad, looks anemic.

April 6. Confined to bed again and takes very little food.

April 20. Suffers from diarrhea. Sores looking more unhealthy, and increasing in size. Takes no meat now.

May 12. Lives almost entirely on brandy and milk. Bed-sores continue to look very unhealthy.

May 21. Died this morning.

Gangrene of the Right Leg.—Amputation. Death fifty-one hours afterward. Large fibrous tumor of the uterus compressing the iliac vessels, (old disintegrating clot in left auricle, (embolic) obstruction of abdominal aorta and iliac arteries with coagulum. Case under care of Mr. Hulke. (*Med. Times and Gazette*, London, 1863, II, 142.) A sallow, dark complexioned woman, aged 55, was admitted into Middlesex Hospital, Bird Ward, April 1, 1863, with moist gangrene of the right leg, which terminated abruptly by a distinct line at the knee. For a short distance above this, particularly in the ham, the tissues were edematous, and the skin had a slight dusky, purplish tint, from stagnation of the capillary circulation. Severe pain in toes. Lower part of abdomen contained a solid oval tumor lying across the middle line, and reaching nearly as high as the umbilicus. Both in front of it, and in the flanks, percussion elicited a clear sound. The liver was not enlarged. The urine was free from albumin. There was no edema of the left thigh or labia. The heart acted very irregularly, four or five beats, then an intermission, then a double beat—so that the pulse could not be accurately counted; it was estimated at 120; no bruit indicating valvular disease was noted. Her general condition was one of great depression.

She stated that since childhood, when her left leg was amputated for white swelling, she had never had any grave illness till last Christmas, when, not feeling well, and discovering the tumor in her abdomen, she underwent a course of treatment for a supposed abdominal dropsy. After pursuing this for a fortnight, in the middle of January a bleb appeared on the instep, which was followed shortly by a discoloration that gradually crept up the leg.

Her temperate habits, apparent freedom from organic heart-disease, and from disease of the kidneys, made it improbable that the gangrene had a constitutional origin; while the suddenness of its occurrence strongly pointed to a local origin, and this Mr. Hulke thought might be the compression of the right common iliac vessels by the uterine tumor, and their consequent obstruction with coagula.

On the following day after admission amputation was done in the lower third of the thigh. There was little bleeding, the main vessels being plugged with coagula. At 10 o'clock, same evening the operation did not seem to have added to the patient's depression. Pulse 100; sleeping; had taken beef tea and tablespoonful of brandy every hour. Next day stump had shrunken much. There had been free oozing of serum from it and there was a want of action, but no appearance of an extension of the gangrene. Continued to take nourishment. Toward evening restlessness and sickness came on, pulse rose to 120 and she died on the evening of the second day.

At the examination of the body a large fibroid tumor of the uterus was found, consisting of several lesser and two principal masses. Of these larger masses, one was connected with the back of the uterus and filled the pelvis, flattening the rectum and bladder. The other sprang from the fundus uteri. It measured more than 7 inches in diameter and lay upon the promontory of the sacrum and lower lumbar vertebræ, over the aorta and vena cava. The aorta, for over two inches above its bifurcation, the common, the internal, and the external iliac arteries for half their lengths, were plugged with solid coagula, which were prolonged in a tapering form into the distal halves of the last named vessels, nearly as far as Poupart's ligament. The oldest coagula were those in the internal and common iliac arteries and in the aorta. The distal halves of the external iliac arteries, which were incompletely filled with coagulum, were fully one third smaller in diameter than the proximal halves, which were completely plugged. The superficial femoral artery, for two inches above where it had been divided in amputation, was plugged with a fibrinous clot, above which this and the common femoral artery were pervious, containing only scattered linear clots. Their caliber was diminished. The vein was plugged for the same distance from the face of the stump as the artery. Above the clot it was distended with black, treacly, fluid blood. The external, internal and common iliac veins, and the vena cava inferior were empty and collapsed. Many of the tissues of the thigh were edematous. Small vessels were plugged, and examination of the limb showed that the popliteal artery and vein were plugged as far as their division, beyond which the disorganized state of the tissues prevented their being traced. The ureters and pelves of the kidneys were dilated, evidently from the uterine tumor damming back the urine. The lungs were edematous, their anterior and lower borders were emphysematous, and their apices bore puckered scars. The heart was large and flaccid; its right side and left ventricle contained yellow jelly-like fibrinous clots, but the appendix of the auricle enclosed an old clot which adhered firmly to its walls. The exposed surface of this clot was cheesy, friable and rough, while its interior was broken down and pulpy. Although direct proof was wanting, for no distinct and

separate emboli were distinguishable in the coagula contained in the aorta and iliac arteries, it is likely that the infarction of these arteries began by the interception of portions detached from the disintegrating clot in the heart, at those points where the arteries were narrowed by the pressure of the uterine tumor.

The method of hysterectomy which I have employed for many years and which is entirely satisfactory is as follows: The patient is prepared for the operation in the usual way. Just before the operation, immediately preceding the administration of ether, a pint of warm water with four ounces of wine is injected into the rectum. This is absorbed during the operation and supplies, in part at least, the blood lost during the operation and prevents shock, which is liable to occur when much blood is lost. I consider this a great safeguard against exhaustion following any prolonged operation where there is likely to be a considerable loss of blood. I always use the catgut for ligatures and sutures, and much prefer it to all others. The catgut which I use is Am Ende's No. 8. The morning of the operation the catgut which is to be used is sterilized by putting it into 95 per cent. alcohol in a wide-mouthed bottle, the stopper being loosely put in, the bottle is put into an Arnold sterilizer, where it remains about ten minutes—the bottle must be full of alcohol and not allowed to boil down and expose the catgut. If necessary, alcohol must be added, in order to keep the catgut covered, otherwise it will be spoiled by the heat.

Am Ende's catgut, prepared in this way, I consider perfectly sterile and feel safe in using it in all abdominal operations. To my mind the absorbable ligature is immensely superior to the silk which is generally used. I have used it for twenty years in all my abdominal work and I have never regretted it. It does not slip if properly used, it is not absorbed too soon and to me it is a great satisfaction to feel that the ligature will be absorbed in two or three weeks and no foreign body is left in the cavity or wound.

All things being ready, an incision is made in the usual way large enough for the removal of the tumor without too much stretching of the tissues. I think a mistake is often made in trying to work in the abdominal cavity through an opening altogether too small. Much more harm is done in this way than would result from a slight increase in the length of the incision. After the tumor is exposed a large curved needle armed with a strong silk ligature is thrust through the fundus of the fibroid and the ligature drawn through and formed into a loop, and this is used for making traction. By the aid of this loop the tumor is slowly and carefully drawn out through the opening and gradually pulled up so as to stretch the broad ligaments and vagina and thus secure as much tissue for the pedicle as possible.

Sterilized gauze is now packed around the tumor to prevent the intestines from protruding and to protect them from injury. This step having been taken I am now ready to commence the removal of the tumor, including the uterus and its appendages.

A pair of large curved Spencer Wells forceps grasp the broad ligament below the ovary. Instead of the forceps a strong silk ligature may be used. After the ovarian artery has been secured in this way, a curved needle armed with No 8 catgut prepared as above directed is passed through the outer edge of the broad ligament one inch or more below the Wells clamp or silk ligature, taking in as much tissue as can be securely tied and no more. If too much tissue is included in the first stitch the ligature is liable to slip when the tissues are divided and troublesome hemorrhage will occur.

I consider this precaution very important. The ligature is drawn through, leaving eight or ten inches of the distal end of the ligature to use in tying as the operation goes on. The ligature is tied very firmly and a second stitch is taken and before it is tightened the tissues are divided far enough above the catgut suture so that there shall be no danger of the tissues slipping through the loop of suture; and the cut extending up to but not beyond what is included in the second stitch, then the second looped stitch is tightened and made fast by tying to the distal end, which has been left long for this purpose. This process is carried on step by step, transfixing and tying and cutting, but always keeping the stitching a little in advance of the cutting so that the blood vessels are included in the suture before they are cut. This process is carried on until the uterine artery is included in the stitch and divided. At every step or two the ligature is fastened by tying to the distal end. If this rule is observed there is no possibility of the suture becoming loosened. When one side is secured in this way the operator changes sides with his assistant and the opposite side is tied and cut in the same way. When both broad ligaments are severed down to and including the uterine arteries the cervix is divided in the form of a wedge with the apex downward. Before dividing the cervix as indicated above, a flap of peritoneal membrane is turned down from the anterior and posterior surface of the uterus long enough to cover the stump of the cervix after its division and stitching. This wedge-shaped cavity is closed by bringing the cervical tissue together with the same catgut that has been used for stitching off the broad ligaments. Then a curved needle armed with a smaller catgut, No. 2, is used to bring together the flaps of serous membrame over the stump. When this is completed the divided cervix is entirely covered with peritoneum, leaving but very little raw surface within the peritoneal cavity. The abdominal cavity is now washed out with sterilized water, the abdominal incision closed, dressings applied and the operation is completed. I firmly believe that this is the ideal method of making hysterectomy. I much prefer it to the vaginal route, even for the removal of small growths requiring the removal of the uterus. The abdominal route gives one an opportunity of inspecting the uterus and its appendages and enables the surgeon to better decide what should be done, whether a myomectomy or hysterectomy. If there is malignant disease of the cervix and a hysterectomy is decided upon the vaginal route is to be preferred, as it enables the surgeon to remove the surrounding mucous membrane if it is involved in the disease.

In view of the fact that very many of these tumors are so rapid in their growth as to entail serious risks to life from the compression of other organs, from their interference with the normal functions of life, from the pains and disabilities they entail or from the profound anemia caused by persistent and profuse hemorrhage, it becomes evident that something more than an expectant plan of treatment must be instituted.

While it is true that many women with uterine fibromata go through many years suffering but little inconvenience, there is always more or less danger to the life and well-being of the patient. There is dan-

ger of cystic degeneration, which takes away the hope of total disappearance by involution. There is also danger of the occurrence of septic infection with suppurative and gangrenous processes threatening the life of the patient. Growths springing from the cervical portion and extending between the layers of the broad ligaments occasion early and severe symptoms from pressure upon adjacent pelvic viscera. Submucous growths have a special danger from the hemorrhages which they induce. Sarcomatous degeneration of fibromyomata has been reported in a number of instances. It must be acknowledged that the prognosis of a growing fibroid is always a serious one. Such a growth is liable to cause death through the exhaustion consequent upon renal, cardiac or digestive disturbances; through the prolonged anemia or finally through septic or malignant changes in the tumor itself. In a large proportion of cases in which life is not destroyed the presence of these growths very greatly restricts the usefulness of the patient, prevents her from gaining a livelihood and entails upon her a prolonged condition of invalidism.

In view of these facts as stated above and in view of the less mortality which follows hysterectomy in the hands of competent operators, I believe the operation should be performed much more frequently than has been recommended by many surgeons. At the last International Medical Congress, Martin of Berlin affirmed that the total extirpation of the uterus would soon be accepted as one of the principal operations for the surgical treatment of uterine fibromata. Martin's series of twenty-six cases presented only one death—a mortality of 3.8 per cent.; Ott, twenty-four cases with one death; Bantock, twenty-three cases with one death; Carle, twenty cases with one death; Zweifel, ninety-three cases with three deaths; Leopold reports twenty cases with no death, and mentions Brennecke's report of nineteen cases with no death, making in all 225 cases with six deaths—a mortality of 2.6 per cent In Europe, five years ago, the mortality shown by the same class of operators was 25 per cent., while now they show a mortality of less than 8 per cent. In the United States, where the tendency is toward the operation of complete hysterectomy, in 281 united cases, three years ugo, there were but 22 deaths—a mortality of but 7.8 per cent. I have no doubt that the mortality is considerably less at the present time than it was three years ago. If this paper shall be the means of calling out a free discussion of this important subject, and shall cause to be put on record other cases of a similar nature I shall feel amply repaid for the labor in preparing it.

GYNECOLOGY IN BERLIN.

A. MACKENRODT.

BY JOSEPH RILUS EASTMAN, M.D.
INDIANAPOLIS, IND.

A. Mackenrodt is especially notable for his originalness. As a younger member of the Berlin Gynecological Society, he shies his castor with unaccustomed aggression before his seniors in age and rank, and is therefore unpopular. It was Mackenrodt (Dührrsen to the contrary notwithstanding) who introduced the ill-fated vaginal fixation for uterine retrodisplacements. He is the only continental exponent of igni-extirpation for carcinoma uteri and of bloodless enucleation of the uterus for intractable postclimacteric inflammations and smaller fibromata. Under the impulse of the condemning reports of Paul Strassmann and others who had confined women with vaginally fixed uteri, "Mackenrodt's operation," after a short life, was relegated, as is well known, to comparative obscurity. Dührrsen still defends it qualifiedly, and the writer has seen A. Martin make the operation repeatedly and recently, but Martin places the uppermost of the three sutures not higher than a point four and one-half centimeters below the vertex of the fundus uteri. Mackenrodt himself having been driven to sectio Cæsaria after vaginal fixation in plural instances, forsook the method, convinced of its unfitness by the testimony of his own experience.

In its stead he is developing a new operation, a vesico-fixatio, by which it is sought to fix the fundus of the uterus over the fundus of the bladder by means of a flap of the latter's peritoneum. He shows by charts and frozen sections that the proversio-flexio so secured and maintained corresponds closely to the normal anatomic position. Two women operated on by this method have borne sound children at term. The technique is as follows: With the patient in the back posture, the anterior lip of the portio is seized with a double tenaculum and drawn forward and downward as for anterior colporrhaphy. A split is then made through the anterior vaginal mucosa, extending in the median sagittal line, from the anterior utero-vaginal junction forward, half way toward the meatus urethræ. The septum vesico-uterinum and the vesico-uterine reflection of peritoneum are successively exposed and divided transversely. The tenaculum in the anterior lip is then replaced by a guy ligature, and the portio is pushed upward and backward to force the vagina conversely forward and downward. To bring the fundus into the vaginal incision double tenaculæ are used. With these one "climbs" upward along the anterior uterine surface, applying each higher than the last, until the vesical peritoneum, which has been peeled loose as high up as possible, may be laid flap-like over the fundus uteri and stitched fast. The peritoneum is drawn as a curtain between the operator and the fundus, the stitches being applied into the latter "through the curtain." The fundus is now released and the anterior vesical flap of the septum vesico-uterinum is sutured into the muscular uterus as high up as the internal os, a centimeter higher than its anatomic attachment, to the end that the fundus may be held more securely forward. An adhesive peritonitis is expected to provide permanent fixation.

In a communication to the *Centralblatt für Gynecologie*, 1895, No. 6, Mackenrodt took the position that adequate use of the glowing cautery offers the only hope for improvement in the statistics of lasting results after extirpation for carcinoma uteri. He recommended that the entire operation be made with the cautery, that the entire wound surface be charred, the goal sought being prevention of inoculation infection. He maintained that even in that instant when the tissues are divided, the wound surface must be protected against the invasion of cancer germs, and that such protection is only possible when all dissecting is done with the Paquelin. "Methods in which the cautery supplements the knife, ligature or clamp are illusory." In an experience of thirty igni-extirpations, Mackenrodt claims not to have had a single recurrence, the post operationem period of observation varying between one and two years; nor was any patient lost from shock.

Having found by experiment and observation[1] that even the largest blood vessels may be safely sealed by the Paquelin in that instant when they are severed by the same, Mackenrodt went a step farther and said "all hemorrhage must be checked by the charring cautery," and that clamps used during the operation to protect the surrounding tissue may be removed directly the operation is finished. The possibility of closing the uterina and spermatica he adds, however, is only present after a provisory application of suitable clamps (wing-jawed like the Langenbeck hemorrhoid clamp, shovel-shaped and curved on the flat), with which the stump to be treated may be emptied of blood and charred, without injury to the urethra, rectum or bladder.

The vaginal igni-extirpation after Mackenrodt is made as follows: After thorough cleansing of the vagina, curettement and cauterization of the exposed carcinomatous foci, the field of operation is disinfected with alcohol and sublimate. If the vulva is small a lateral incision is made with the cautery into the perineum. The portio is then seized with strong double tenacula, drawn downward and forward, and with the Paquelin the posterior vaginal wall is separated from the collum, and the cavum Douglasii opened. The vaginal wall is next burned off laterally, and lastly anteriorly from the uterus.

The connective tissue between the bladder and the uterus and ligamenta lata is now put upon the stretch by the thumb of the left hand pressing against the anterior vaginal wall. In dividing these connections the Paquelin is drawn from left to right in repeated strokes, the tissues giving way in the direction of least resistance, exposing the anterior aspect of the uterus and broad ligaments. The shovel-shaped clamps are now applied to the broad ligaments, their concavity toward the uterus. The stumps on each side are successively burned through and charred to the surface of the clamps. The clamps are removed and the remaining connections between the bladder and uterus are divided in the manner described above. The peritoneal cavity having been opened anteriorly, the left index finger is passed through the opening, over the crest of the right broad ligament, and a clamp is reintroduced and made to embrace the remaining peritoneal portion of the stump. The latter is then divided with the cautery. Lastly, the clamp is applied to the left ligamentum latum, the stump divided and the uterus removed. Iodoform gauze is placed in the peritoneal opening to prevent the decensus of intestines and the perineal incision is sutured up.

Mackenrodt is a warm advocate of Battey's colpotomia posterior. He practices the operation himself and has done much to bring it into new favor. He prefers the posterior to the anterior vaginal section, because of the former's simplicity and safety of principle.

During the last few months he has removed all uteri demanding radical operation for other conditions than malignant neoplasms and large fibroids by enucleation. In the majority of cases he is able to accomplish this without the use of a single ligature. Occasionally, however, he ligates the ovarian artery. The technique is the simplest possible. He seizes the portio with a double tenaculum, and with a pair of short curved scissors makes an annular incision through the vaginal vault at the utero-vaginal junction. He proceeds upward, clipping with the scissors in the endopelvic fascia, until the uterus is freed.

Delaware and Vermont Streets.

[1] After castration of stallions, hemorrhage from the spermatic artery may be checked without ligature, by the application of a red hot iron.

LEPROSY OVERCOME BY ISOLATION IN THE MIDDLE AGES.

BY ALBERT S. ASHMEAD, M.D.
NEW YORK.

In the Middle Ages leprosy spread in every country of Europe and continued to spread until strenuous efforts were made to bring the diseased parts out of contact with the healthy community. In this no charitable regard was had to the victims of the scourge; the weal of the sane majority alone was considered. It is from this point of view that it behooves us also to judge the conduct of the church. The Order of Lazarus was founded and lazarettoes built in great numbers. The work and purpose of the order were to segregate and govern the afflicted and dangerous part of humanity. The thing was necessary, was an unavoidable consequence of the resolve of healthy mankind to remain so, and it was not so much charity as one might believe. The community wanted this work to be done, and who could do it but the church?

But, according to Dr. Ehlers, Secretary-General of the Berlin Lepra Conference, the church might have been spared these worries and these dangers, for isolation is not necessary, as these Middle Age people believed, who, through isolation, were fortunate enough finally to overcome the disease.

It is not certain that the growth of civilization since the Middle Ages has rendered the spread of leprosy impossible. We cheerfully admit that it can not overwhelm people who are clean in their habits, well separated in their families, careful of their bedding, living in sufficient remoteness from the inferior animals, etc., as it did our ancestors of the Middle Ages, whose life was so very different. Yet some danger still exists, and the spread of leprosy in various parts of Europe, and in parts which I venture to say are cleaner than the leprosy centers of Norway and Iceland, proves that the disease has not lost, under any circumstances, its vital stamina; it seems to stir itself with remarkable vigor, and to be able to take advantage of any elbow room left to it.

If enforced isolation and a permanent committee of official delegates do not come out of the Congress of Berlin—and Dr. Ehlers does not want them to—that Congress will have been held for nothing, or at least only *ad majorem Ehlerii gloriam*.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(Continued from page 631.)

XIII.—GERMAN MEDICINE.

Albert von Haller (1708–1777) shone above all others. Born for science, at the age of 8 years he applied himself to Greek and Hebrew dictionaries, outlined a Chaldean grammar and collected the biographies of several thousand celebrated men. While a

gay youth he wrote Latin and German satires upon his teachers. At 15 he went to Tübingen to study medicine and in the following year wrote an anatomic polemic against a professor. After a two years' sojourn there he is said to have been expelled because he, with some other students, had made a shepherd so drunk with brandy that he died of the effects. He went to Leyden, where he became the friend of Boerhaave and of the young anatomist, Albin. After his graduation he went to England and France, to Douglas, Cheselden, Jussieu, J. L. Petit and Winslow. In Paris he lived with le Dran for the study of surgery and anatomy. Then he went to Basel expressly to hear Bernouilli's lectures on higher mathematics, which later charmed him so much, that upon his wedding day he employed himself diligently with differential calculus. In 1729 he was a practicing physician in his native city of Berne. The city had an anatomic amphitheater built for him, appointed him director of the hospital and overseer of the city library, where he pursued historic and bibliographic studies, arranged several thousand old coins and at the same time showed great fondness for botany. In 1736 he was called to Göttingen as professor of anatomy, botany and surgery. His fame increased from year to year; the academies endeavored to welcome him among their members; there came calls to Oxford and Utrecht and as president of the Berlin Academy. Although George II. loaded him with favors and obtained for him a patent of nobility from the emperor, after a residence of seventeen years he left Göttingen, chiefly on account of his health, as in his house, which was built on a marsh, he had for a long time suffered from intermittent fever, and had had a severe nervous fever. He had also buried two wives there. The story that he left Göttingen rather out of chagrin, is very improbable; it could not but happen that as a great mind he would be publicly and privately maligned. He went back to Berne in 1753 and accepted a place in the great council and as inspector. There he had to do with agriculture, salt works, sanitary regulations and institutions of learning, and he made many journeys in the interests of the state. Göttingen tried to secure him again, the Empress of Russia to draw him to St. Petersburg, but in vain; he remained in Berne. In the last two years of his life he suffered much from insomnia, but, nevertheless, he worked with ease and lived almost entirely in his library, where he slept and spent long months. He died on Dec. 12, 1777.

Haller was one of the greatest scholars of his century, and one of the last polyhistors, highly renowned as a physiologist, anatomist, botanist, author, poet and statesman. He carried with him an Alpine load of erudition (Herder). He had as good command of the languages of antiquity as of those of all civilized nations, and was at home even in Tartar and Chinese. It is difficult to say whether one should admire more the variety of subjects treated by him, the thoroughness of his researches, or the power of his judgment to draw conclusions from the mass of facts. Although wife and children, pupils and friends had to help him in his work and he hurried through over 12,000 reviews a day in this way, he has written works of colossal scope, each one of which would require a lifetime, and was without its equal. Among them are his great classic works on botany and anatomy, and the literary history of these subjects and of surgery and medicine. He worked for years on the publication of Boerhaave's lectures, which he supplied with notes, and over which he came into conflict with van Swieten, with whom he was never very friendly. His most important work was his physiology ("Primæ Lineæ Physiologiæ," 1747; the great work "Elementa Physiologiæ," 1757), with which a new epoch begins. In this he laid down his doctrine of irritability, which within a short time superseded all other physiologic and pathologic questions. Hitherto æther had been taken with the principle of the soul to explain the movements of the body, and the doctrine of Glisson (born 1597), that each fiber has capacity to be moved by means of an irritant, seems to have been forgotten. Beginning here, Haller first turned to irritability as an independent power of the muscles, which was the cause of movement and vivified the hitherto dead machine of the mechanics. At first he attributed three kinds of force to the muscles: The dead so-called elasticity; the implanted so-called irritability, which remains only a short time after death; thirdly, the nervous force, which is conveyed to the muscles from without through the nerves. Since irritability remains in an animal that has been killed, and in a heart entirely separated from the body, it can be derived neither from the brain nor from the soul, and the control of the will over it is not to be considered. In this Haller opposed the doctrine of Stahl. In 1752 he laid before the Göttingen society 190 experiments in which in various parts of the body he had demonstrated irritability and nervous force. The periosteum, peritoneum, pleura, ligaments, cornea, callosities, cerebral membrane and tendons he considered entirely insensible; the nerves, on the contrary, sensitive but not irritable, because they do not move at all. Irritability is found only in parts supplied with muscles (and in the uterus); this power is contained in the gelatin which with the earthy component forms the muscle-fiber. It remains a long time in the severed muscle, and those muscles are the most irritable which retain this property longest after death—first the heart, then the intestines, the diaphragm, and lastly the voluntary muscles. With these different degrees of irritability he would also explain the differences of temperament; a high degree of irritability with strength of fibers, was said to constitute the choleric temperament; with weakness of fibers, the sanguine; a low degree, with weakness of muscles, the phlegmatic. The doctrine of irritability forced its way into physiology. When Haller first introduced into this science exact research with experiments, he became the founder of special physiology. He took up all the organs of the body in turn, showed them first anatomically, then experimentally, and finally explained their functions. This method of research, by which he made a mass of discoveries and widened considerably the limits of anatomy and physiology, was at that time entirely new and an extraordinary advance. Haller soon found his followers and opponents. Chief among the latter was Whytt, who considered experiments upon tortured animals questionable; de Haën, who as the most violent of his German opponents, in the end accomplished little; and le Cat, who was decorated by the Berlin Academy, which had announced a prize essay on muscle action. All of the candidates for the prize had expressed themselves against Haller. His principal advocates were Winter, Fontana, Zinn, Zimmermann in Hanover, and Tissot in Lausanne. The doctrine of irritability gradually penetrated into all

pathologic discussions, although it was usually misstated, and hence brought about much confusion in the second half of the century.

Haller, the poet, should not be left without mention, since he was one of the first to give a new impetus to the sadly decaying literature. The imposing nature of Switzerland gave him new impressions (his most celebrated poem is "Die Alpen," 1729) and he led poetry out of the study into the open air. At the hand of the British poets he sought an impressive presentation, and his poems, which possessed an unaffected sentiment and deep comprehensive ideas, were considered, throughout a generation, as the correct model. In later years he wrote a romance in which he sought to characterize the forms of government.

A short time before Haller began to teach in Göttingen, *Gaub* (1705–1780) had gone to Leyden as professor of medicine. He was Boerhaave's favorite pupil and for twenty years only made commentations on the Institutions of his teacher, and then for the first time published his own Institutions (1758). For a long time these have been regarded as models, and until the revolution in pathology of the most recent times, they formed the basis of most German Pathologies (Wunderlich). A selector, of the purest water, he wrote with great clearness, although he was not free from inconsistencies, in that often proceeding from a correct principle he would later abandon it.

About this time Boerhaave's doctrines were carried to Vienna by his pupil *Gerhard van Swieten* (1700–1772), and through him the Vienna School was founded. This soon set the fashion in Germany. Van Swieten, born in Leyden, developed such extraordinary industry during his studies that he grew ill and fell into melancholy. Under Boerhaave's tenderest friendship and personal care he recovered and showed his gratitude by refusing a splendid offer from London; with unassuming modesty Van Swieten remained a pupil of Boerhaave until his thirty-eighth year and did not leave him till the latter's death. Since, as a Catholic, he could not hold a professorship in Holland, he accepted, in 1745, a call of Maria Theresa to Vienna. Upon his entrance into the imperial service, the reformation of the medical sciences fastened itself upon the Austrian monarchy. As Perpetual President of the Vienna Medical Faculty, which he found in a lamentable condition, he gave an entirely new form to that body and drew thither various teachers (De Haën, Jacquin, Laugier, Collin, Pallucci). One of his greatest services was the introduction of clinical instruction into medicine in Austria. As chief of the military medical department, he organized the entire instruction in medicine and natural science. Van Swieten had written down Boerhaave's lectures almost verbatim by means of Ramsay's stenography; he then began to publish a commentary on the Aphorisms of his teacher, which were an oracle to him, according to his own statement. He first explained almost every word with exaggerated conscientiousness, and later proceded independently. These commentaries, a work of thirty years' study, won a European reputation in the second half of the century, and were in the hands of all physicians. They were distinguished less for great ideas and new points of view than for therapeutics excellent for that time. In this work lay a peculiarity of the time which arose in the character of the eighteenth century, and is in sharp contrast to our views. It was, among other things, the subordination to authority, the high esteem for it. It is hardly conceivable to us how so highly gifted, original and learned a man as Van Swieten could find his highest honor, for twenty years, in being called the pupil of Boerhaave, as Haller, one of the first scholars of the century, who later did go his own way, did not disdain to publish Boerhaave's lectures. This mania for authority worked the immense detriment of putting brass chains upon free research, against which the advantage of allowing no self-conceit to flourish in the great mass of mediocre heads, went far toward balancing.

When in 1754 the professorship of the medical clinic in Vienna was founded, Van Swieten obtained it for his previous companion in study, *Anton de Haën* (1704–1786), who had sat with him in Boerhaave's lecture room. De Haën became the first clinical teacher of Vienna and of Germany. A captivating eloquence and an ardent enthusiasm for science were united with a rare energy through which nothing was too much for him in spite of his many-sided activity. With these he possessed, unfortunately, a boundless ambition and a high degree of sensibility, and felt himself injured by the praise of other men. He could not bear even the recognition which was given to Van Swieten; only one man he honored devotedly until his death, his teacher Boerhaave. His intolerance made him many opponents. In his fifteen volume work, "Ratio Medendi" (1757), he showed himself chiefly as an empiricist and an enemy of the systems, and endeavored to demolish all newly arisen theories upon empiric grounds. He vigorously opposed vaccination, the general acceptance of which in Austria was impeded many years by his authority, and he was weak enough to defend belief in witchcraft. He esteemed pathologic anatomy very highly, and confessed it openly when dissections disproved his diagnoses. In therapeutics, bleeding and electricity played a large part. His careful researches have brought to light many important observations, whose value, however, he did not always perceive, so that, gradually forgotten by physicians, they had to be discovered anew in more recent times. Among these belong especially his measurements of temperature in the inherent heat of the body.

It is of interest to see what part the previous century has in a method of investigation which has become established in medicine only during the last decade. After Sanctorius (died 1638) first took the temperature of the human body with a thermometer made by himself, a hundred years passed before Boerhaave did the same thing with improved instruments. Van Swieten considered the estimation of the heat by the hand uncertain and measured it according to Fahrenheit, a citizen of Danzig, who had constructed his thermometer in 1731. De Haën took up this method with great energy, applied it to healthy patients. He left the thermometer in the armpit seven and one-half minutes and then added to the degree marked, 1 to 2 degrees, because he had ascertained that the quicksilver afterward rose that distance. He found the temperature higher in the aged, observed the morning remission and evening exacerbation in fever cases and an increased temperature during a chill, which his contemporaries declared the greatest paradox; further, he noted the incongruity of pulse and temperature in many cases, and the frequent contrast

between the subjective feeling of warmth and the objective increase of temperature. He adapted his therapeutics according to these variations of warmth and regarded a return to the normal temperature as an evidence of recovery. De Haën remained isolated; the other German physicians did not trouble themselves at all about his measurements. Previously, in England (1740), accurate measurements were made on healthy men and animals, and the Swede, Martin, devoted almost two years to such observations, which he made known in 1764. He found 36 to 37 degrees Cels. as the highest degree of temperature of a healthy person, and stated accurately the variations in baths, food, drink, poisons, bleeding, etc. Blagden ascertained that the temperature of a healthy body remained the same in a room heated to the boiling point of water. Then John Hunter published, in the "Philosophic Transactions (1775–78), his thermometric experiments, which were begun in 1766. He showed that animals, to which he had applied a thermometer so small that it could be introduced into the urethra, could bear the external cold because they produced heat enough within themselves to counterbalance it. The proposition that in fever the temperature of the body increased about 12 degrees F., led him to investigate as to whether the increased heat could also have its origin locally in parts of the body. Thus he was the first who marked the rising of temperature in inflammation. After the operation for hydrocele he found the temperature of the tunica vaginalis 33.3 degrees Cels. (Hunter measured according to Fahrenheit.) The cavity was filled with lint, which was covered with salve, and on the following day, when inflammation had developed, the thermometer showed 37.08 degrees Cels., a considerable rise. But this is apparently not the case of the temperature of the blood, for he considered that the blood in a healthy condition had a maximum heat and thought that nothing, not even local inflammation, could raise its temperature beyond this degree, excepting a general affection. Although the inflamed parts of the body have a higher temperature than in the normal condition, yet the differences are too small to account for the febrile rise of temperature of the whole mass of blood. Natural heat, he thought, did not arise from the movement of the blood, but he considered it very probable that it depended upon a principle which was intimately connected with life and independent of circulation, sensation and will, and that the chief source of animal heat lay apparently in the stomach. Hunter considered the determination of the degree of temperature of a patient by feeling as inadmissible in the extreme, because the personal temperature of the physician never stood at a fixed point. Through measurement one comes nearer to the truth than is absolutely necessary fer pathology. Soon afterward there appeared in France the celebrated work "sur la chaleur" in the Mém. de l'acad. 1780, by Lavoisier, the discoverer of oxygen. He thought, with Laplace, that the cause of natural heat lay in the chemic combination of oxygen with hydrogen and carbonic acid in breathing, and placed the seat of the formation of heat in the lungs. The English military surgeon, Hamilton, declared in 1789 that a good, accurate thermometer for determining heat in fevers was very necessary to surgeons. In 1797 James Currie published his valuable "Medical reports on the effects of water, cold and warm, as a remedy in fever and other diseases," in which, for the first time since de Haën, measurements of temperature, which always were appended to histories of cases, were again made valuable for purposes of therapeutics. This method pervaded Currie's entire practice. In the variations of natural heat he examined the effects of cold and warm water, of digitalis, of opium, etc. In spite of many editions and translations his work had no real influence on his contemporaries; the practitioners of all countries did not in the least consider the heat of the patient. In 1821 Hufeland drew Currie's work from oblivion for a short time when he issued a prize essay on the examination of these experiments. (Wunderlich.)

The preponderatingly practical direction which de Haën had taken was followed after his death by his Vienna colleagues. They did not concern themselves with theoretic researches and were indifferent to all new ideas. Störck and Stoll exerted the most influence, the former principally in Austria, the latter in all Germany. *Störck* (1749–1803) became chief of the department of medical instruction in Austria, after van Swieten's death, in which position he issued a far-reaching regulation that students and teachers must be brought under discipline. They prescribed the books which must be taught and studied and introduced the censorship. These chains placed upon Austrian medicine necessarily made a free development impossible, and the immediate consequence was that, in spite of the enormous mass of material for observation, which was created by the founding of the general hospital, the Vienna school fell into decay. Störck made many pharmacologic investigations, especially concerning hemlock, which he recommended for scirrhous indurations and malignant ulcers, and on stramonium, hyoscyamus, aconite, colchicum, etc. His colleague, *Stoll*, educated by the Jesuits, entered their order and afterward withdrew from it. He had studied medicine under de Haën. Through his marrirge he received the clinical professorship in Vienna, and soon his lectures became world renowned, so that pupils flocked to him from all sides. Nevertheless, he had to suffer neglect, in that not he but his personal opponent, Quarin, was appointed director of the newly founded hospital of Vienna and they placed only twelve beds at his disposal. Careful observations and accurate dissections distinguished him. His most important idea was that retained gall is frequently the cause of acidity, and the most varied diseases are generated by the introduction of gall into the blood. Thus ophthalmia arises if gall is lodged in the eye. Apoplexy, if it flows to the head; similarly, angina, cholera, pneumonia, petechiæ, asthma, etc. In dissections he very frequently observed a bilious pleurisy and considered a bilious character very prevalent in epidemic fevers. In consequence of this opinion, emetics which would remove the gall were the principal remedies and there was a time in Germany when, through the general acceptance of Stoll's doctrine, purgatives and emetics were universally used. When later this system of therapeutics did not fulfil his expectations he asserted that this came about from a kind of epidemic, changing at certain times, which, from 1776 to 1780, in Vienna had become thoroughly bilious and inflammatory, and added somewhat of pleurisy to all diseases. In regard to the emetic of de Haën, both he and his colleague, Störck, changed their views and both also desisted from frequent bleedings, which de Haën had recommended.

We stand in the midst of the second half of the

century, where, in the continual strife between the two systems of Hoffmann and Stahl and the doctrines of Haller, the chief principle of these theories was lost. Hoffmann's nerve fluid was not generally satisfactory, since it was not to be demonstrated, and instead of this theory, brain and nerves were thought to be the only organs which exercised control over the whole body. From them all diseases were said to spring, through them all medicines to work. Hence arose the nerve pathology, which was introduced into Germany by *Unzer* (1771). He already knew the distinction of transmission from the brain to the separate parts and conversely from the periphery to the brain through different nerve fibers. As a system, the nerve pathology of the Englishman Cullen became incorporated into medical practice. As the nerve fluid failed, so the soul; it was no longer thought to be a part of the organism, although they admitted a psychic influence upon the operations of the body. Now, in order to understand the connection between the soul and the body, a middle term was necessary and, as such, fancy created a life principle, a power different from the soul, which without any clear conception was called vital force (Lebenskraft). To this confusion was added Haller's theory of irritability, distorted in every direction.

While the theorists turned their attention almost entirely to the solid parts of the body, although less in their anatomic bearing than as regards irritability and sensibility, the practitioners chiefly took up the fluids and acidity. Thus the gulf between the pathology of the solids and the pathology of the fluids grew wider. As an adherent of the latter, *Christian L. Hofmann*, who derived all diseases from an acid or putrid condition of the fluids of the body, acquired great influence, as also did *Kämpf* of Zweybrücken, through his work on constipation. Besides Stahl's fundamental ideas on the obstruction of the portal vein he considered coagulation, *i. e.*, the thickening of the fluids in the intestines and vessels of the abdomen as the most prolific source of many abdominal affections; for this he devised his visceral clyster, which has become celebrated (1784). At the same time attempts were made to classify diseases according to the ideas of the botanists. Sauvages of Montpellier made the first move in this direction, and in his system, in which diseases were classified according to symptoms, there were contained 295 genera morborum with about 2,400 species, which were still further divided into classes and orders. Linnæus' celebrated name gave to this movement a higher significance, as Buffon's did to geology and Werner's to mineralogy, insomuch that it became very popular with physicians, and soon new and ill-fated classifications were daily put forward from all sides.

In the contradictory waves of abstract definitions and empty works, in the constant theoretic discussions of the highest questions of life, which were indeed conducted with eminent ability and intellectual penetration in the eighteenth century, there was attained at least one advantage; the mind was exercised in free thought. In contrast with the intellectual torpor of the past this was certainly to be viewed as a step in advance. But one melancholy result was that many inferior minds produced an enormous and unfruitful literature. There developed a general confusion in the thought and language of German physicians continuing through two generations; not only this but all faculty for simple observation was lost. This lethargy might have been dispelled by a study of the ancients, but the men who were identified with the movement in the course of the century (Hebenstreit in Leipzig, G. G. Richter in Göttingen, Triller in Wittenberg, and later Gruner, Baldinger and others) displayed nothing but medical pedantry, which they paraded in their writings.

No time could be more fitting for a revolution than this, when every higher impulse and all fresh vitality was lacking in medicine. Accordingly the system of *John Brown* at the end of the century passed through Germany like a flash of lightning. From a poor but gifted Scottish family, he was at first a linen weaver and afterward became a tutor. Brown had given up theology on translating a medical dissertation into Latin for an acquaintance. He now devoted himself to the study of medicine and, unfortunately, also to brandy, to which he adhered during his whole life. His unbridled excess undermined his health and led him to bankruptcy. Then Cullen took an interest in him and made him a "privatissima" instructor for his students. But the love which Brown at first cherished for his teacher was soon changed to hatred when a professorship was denied him. In opposing Cullen he published a new system ("Elementa Medicinae," 1780) and thereby fomented a strife in the Edinburgh Faculty. They attacked and persecuted him in every way they could; and on the other hand he in his lectures did not scruple to heap gross abuse and detraction upon the hitherto prevailing system of medicine. The students divided themselves into two parties and seem to have taken up the quarrel of their teachers with their fists. Brown, on account of his extravagance, was again thrown into the debtor's prison but was liberated through money furnished by his students. He went to London, but his success there was only slight in spite of the fact that he sought to attract students to himself by means of a Free Mason's lodge. A call to Berlin was frustrated by his sudden death (1788); being drunk, as usual, he took an overdose of opium and died of apoplexy. He regarded the source of life as consisting in excitability, *i. e.*, the capacity which exists in every part of the body, and through which an external stimulus is able to excite a certain activity. He admitted that he did not know what this excitability is, but he assumed that it has its seat in the nerve medulla and the muscle substance. The effects of the stimulus to the sensibility he called excitations, and regarded life as a chain consisting of these effects. He considered that health rests on a moderate excitation and diseases arise when the stimulus is too high or too weak; in the former case there results a sthenic condition and in the latter case an asthenic condition. The difference between health and disease consists simply in a different degree of excitation. "The simplicity to which the medical science is reduced is so great that a physician when he approaches the sick bed need only understand three things clearly: 1. Whether the disease is general or local. 2. If general, whether it is sthenic or asthenic. 3. Of what degree the ailment is." These are Brown's indications in the therapeutics of general diseases. He did not concern himself with the seat and the course of them. In sthenic diseases the excitation was diminished by means of the weakening remedy antiphlogose; in asthenic cases, and these were not frequent, it was increased by the use of stimulating remedies, spirits and especially opium. Brown himself had fully experienced the stimulating effect

of opium, for before and during his lectures, in order to stimulate his mind he repeatedly drank a glass of brandy containing fifty drops of laudanum. "Opium mehercle non sedat" was his motto. What a vicious influence his excesses had on his therapeutics was shown among other things, in his treatment of typhoid, in which he administered from ten to twelve drops of laudanum every quarter hour, gradually increasing the dose. By the end of the century opium had become almost a household remedy among the English and was misused to an almost incredible extent. In Germany some favorite syrup was added to every compound, while in England such and such an amount of tinct. thebaica was admixed.

While the English with their tendency to empiricism remained rather indifferent to the system of their countryman, it found an enthusiastic reception in Germany on the part of the rank and file of unripe academic teachers and thoughtless practitioners. It was dazzling in its simplicity; there was no system by which diagnoses could be so easily made and indications so readily determined. It was responsible for a scandal when Girtanner in 1790 published the Brown system in a French journal as his own. The strife soon waxed violent and painful, and the system was proclaimed in Germany with unheard of arrogance. All the journals swarmed with articles for and against it; indeed, German medical literature for a few years consisted of nothing but stimulus and excitation and direct and indirect infirmity. Hufeland early asserted himself against the system, although he recognized Brown's mental penetration and sought to discover a few useful doctrines in the mass of false propositions. The most enthusiastic adherent was Röschlaub, who indeed founded his own magazine as an organ of the excitation theory, and therein his polemics soon degenerated into common ridicule. His fanaticism went so far that he, a German professor, did not scruple for the sake of the system to fabricate entirely and to publish the history of a case involving A. von Kotzebue, whom he believed to be in Siberia. The latter exposed the whole fraud, whereupon Röschlaub confessed the lie. They raged and quarreled on both sides. Those German physicians who were at the same time good surgeons, opposed the system. J. P. Frank, at first a moderate advocate of the Briton, afterward withdrew; and when Stieglitz, with his sharp critique, had given the system a telling blow, the excitation theory waned. It was Schelling's natural philosophy that at the beginning of this century ushered in a new epoch. The history of Brownism strikingly illustrates the transient character of medical theories. Within the short space of ten years it had been promulgated with fire and sword, and in most of the universities was dispensed to the young physicians as the only saving doctrine, and was within that time borne to its grave.

At the turning point of the century a very marked step was accomplished in the application of chemistry and physics to the theory of medicine. After the discovery of oxygen, which brought about the fall of Stahl's hypothetic phlogiston, Girtanner asserted that oxygen was the life principle of all organic nature. Thereupon developed an antiphlogiston school, which in most diseases assumed the presence of too much oxygen, and in a few diseases too small a quantity of oxygen. Irritability and sensibility had previously been the battle-cry; now they dreamed of oxygen, hydrogen and carbon. In physics Galvani had made the discovery of animal electricity, and Volta had discovered the Voltaic pile. These things were eagerly seized upon and forcibly adapted to a theory of medicine. They considered electricity as the living force, believing irritability to be concentrated at the positive pole and sensibility at the negative, and other similar fancies; in short, the processes of life were regarded as an involved galvanic operation (Reil). A. von Humboldt was identified with this movement, and in 1797 published his experiments with vivified muscle and nerve filaments.

We will here close our review of the theoretic investigations in German medicine. In spite of the great partiality for this kind of work, yet special pathology was by no means neglected in the eighteenth century, and in Germany was represented by a small but eminent company of practicing physicians. These often instinctively hit upon the right method, applying themselves to the description of diseases, and in their therapeutics observing great simplicity and avoiding all extremes. Of course the details of pathology could be pointed out only in the most general outlines. Here above all shone the systematist, Friedrich Hoffmann, who first furnished an accurate description of chlorosis, diseases of the liver and esophagus, and first asserted that apoplexy consisted of the bleeding of a ruptured blood vessel of the brain. He also wrote good works on hysterics and scurvy. His colleague Stahl, treated the subject of hemorrhoids. The Vienna school followed an essentially practical tendency and employed itself especially with diseases of the respiratory organs. Here the most important discovery was that of percussion by Auenbrugger ("Inventum novum ope percussionis occultos pectoris morbos cognoscendi," Vindob. 1760), which however was not at all appreciated by his contemporaries. Van Swieten first asserted that epilepsy was a disease of the brain, and in the treatment of syphilis he introduced a solution of sublimate in brandy, and did some very careful work in tuberculosis of the lungs. Like Boerhaave he recommended in this affection thorough inhalations of steam from warm water and vinegar in order to induce expectoration. A. G. Richter was also convinced that the local treatment of the tuberculous sores in the lungs by means of inhalations was of the utmost importance, and that it was often neglected with disastrous results while everything was expected from the use of internal remedies. The Prussian regimental surgeon, Ollenroth (1798), after paracentesis of the breast used inhalations of warm steam from his inhalation machine and achieved the best success. Later Hufeland recommended for consumptives and asthmatics the construction of a pneumatic cabinet, *i. e.*, a room filled with carbonic acid gas in which the patients should inhale for the space of half an hour or an hour. The inhalation system was not neglected abroad, and in the seventies balsam steam was celebrated for tuberculosis. The Englishmen, Bennet and Mead, used frankincense, storax and benzoin; the Frenchman, Billard, used the steam of pitch, turpentine and Peruvian balsam.

At the end of the century there came into use inhalations of ether which Currie recommended in cases of asthma and Pinel in membranous croup. The English military surgeon Hamilton, for inflammation of the throat and tonsils, employed an inhalation apparatus which consisted of a funnel with a bent tube two feet long. The funnel fitted directly on the opening of a teakettle, in which warm steam had

been generated by the boiling of herbs, and the patients inhaled through the small opening of the pipe (1789). Whooping cough, pleurisy, lead diseases, etc., were treated by de Haën; Plenk supplied the first classification of skin diseases (1776) Certain epidemics of the time gave a special character to practical medicine. In 1708 and 1709, in consequence of the war, the plague raged in Prussia, and in Danzig alone 24,500 men died; a few years afterward it spread to Austria, Bavaria and Holstein. Epidemic catarrh and exanthematic typhus appeared frequently, and abdominal typhus was first described in 1762 by Röderer and Wagler. Friedrich Hoffmann, van Swieten, de Haën, Werlhof supplied important contributions on intermittent fever, and gastric fever gave the Vienna physician, Stoll, occasion to develop his fundamental propositions on the bilious character of this disease. Poisoning by lead, and especially by ergot, was accurately observed and chronicled (Wichmann and Zimmermann). Trustworthy observations on scarlet fever were first made in the eighteenth century by the body physician Storch in Gotha (1742). Among the most important contagious diseases was smallpox, concerning which the principal point of interest lay in inoculation, by which its ravages might be checked. This was in general use in Constantinople in the eighteenth century among the Greeks. The wife of the English ambassador at the Turkish court, Lady Montague, had her child inoculated by her surgeon, Maitland, and after her return to England did everything in her power to introduce inoculation. Maitland, at the request of the Princess of Wales, inoculated six criminals in London, in August, 1721; since that time the new method has been transplanted to all civilized nations. In Germany, as it appears, J. E. Wreden, for the first time in Hanover, inoculated several children (Feb. 2, 1722). The second most important epoch begins with Jenner's introduction of vaccination, for which he deserves the greatest gratitude from mankind. The first vaccination in Germany was performed in Hanover in May, 1799, by Ballhorn, who had translated Jenner's first famous work ("Inquiry Into the Causes and Effects of the Variolæ Vaccinæ," 1798), and by Friedrich Stromeyer, with lymph sent them from London. From this point the introduction of vaccination spread to the whole kingdom. The two colleagues sent lymph to Vienna and other cities, and after about one year had accomplished, together with other Hanoverian physicians, over seven hundred vaccinations, probably the most extensive experiment which had been made in Germany up to that time.

With the perfecting of chemistry, materia medica took a new impetus. So long as the former remained in its infancy, the latter was not much more than a trade in spices. The plants were brought to the apothecaries by the herb-gatherers and were often mistaken by both. Now chemistry produced the most powerful medicines from all the riches of nature. Botanic gardens were cultivated. A. von Haller established the garden in Göttingen and in 1739 had the first plants sown. Greifswald obtained such a garden in 1763. Phosphorus was used as a medicine and hemlock was introduced chiefly through Störck's efforts. Various narcotics, belladonna,[1] hydrocyanic acid, digitalis, arsenic, quicksilver, bismuth preparations, lime water, etc., found many applications. Baths and springs came into use especially through Friedrich Hoffmann; and Driburg, Wildbad-Gastein, Nenndorf, Saidschütz, Seidlitz, Selters and others appear among the newly discovered springs. Even electricity was turned into a remedy and first used by Professor Kratzenstein in Copenhagen (1745). They treated long standing paralysis with it, but went to extremes, as with all new remedies. They recommended it for every possible ailment (toothache, amaurosis, deafness, intermittent fever and for the killing of tapeworms), so that a reaction necessarily followed and such men as Haller opposed it strenuously. The mysterious forces of the magnet attracted Mesmer in Vienna. He believed he had discovered a still more effective power in his own hands and called it animal magnetism. In 1774 he made it public and magnetized, at first with the magnet, later, in numberless cases, simply by contact. His labors found little recognition from the various academies in Germany and Paris; the latter declared, at the instance of the king of France, that magnetism could do nothing without the help of the imagination. On the contrary, physicians and laymen, especially in France, took up magnetism with great enthusiasm. It invaded all the periodicals and much nonsense was compiled.

Aside from the Vienna school the Hanoverian court physicians were especially conspicuous as practicing physicians. The oldest among them was *Werlhof* (1767), who attached his name to the morbus maculosus first desribed by him. *R. A. Vogel's* (†1774) chief service was the founding of the first and also one of the best medical journals in Germany; aside from this he did considerable work in chemistry and mineralogy. *Zimmermann* (†1795), at first a physician in Switzerland, was an advocate of Haller's theory of irritability, and later, a warm friend of Kämpf's ideas. He wrote on dysentery and became especially celebrated through his two-volume work, "Von der Erfahrung in der Arzneikunst" (1763-64), which is still read with the greatest interest. The sketches concerning experience, scholarship, the spirit of observation and genius reveal the fine mind, penetration, and the many-sided culture of the author. *Wichmann* (†1802) published chiefly "Ideen zur Diagnostik" (2 parts, 1794-97), in which he pointed out, with great fidelity, the failings of medicine and sought to remedy them through the perfection of diagnosis. He deserves the credit of being the first to trace with certainty (1786) the etiology of the itch to the itch-mite, of which Bonomo had furnished the first exact description (1786). He first showed that in order to perceive the mite the black speck must be extracted and the parasite placed upon a green cloth where its movements can be observed. It was a long time before this etiology was accepted without question; even in the year 1834 Blazius asserted that the mites were by no means always present and were less the cause than the product of the itch. *Lentin* (†1804) wrote various contributions and notes, chiefly on croup and raphania. Aside from these Hanoverians, *Johann Peter Frank* was conspicuous as one of the most celebrated practical writers of the eighteenth century (†1821). He was clinical pro-

[1] Just a hundred years have passed since the property of dilating the pupil of the eye was discovered in belladonna. When Daries ("de Atropa Belladonna," disp., Leipzig, 1776) got a drop of the fresh liquid in his eye and in consequence of this could not see well for three weeks, Dr. Reimarus found the pupil very much dilated. He thereupon decided to use this poison to paralyze the iris for extraction of cataract. Experiments on cats established the dilation of the pupil and in dissection the iris was found to be much relaxed and drawn back. Himly first applied this discovery to ophthalmology.

fessor in Göttingen and then in Pavia; in the latter place he organized the medical faculty and in 1795 became director of the general hospital in Vienna, where he founded the pathologic-anatomic museum. After a short stay in Wilna he went in 1805 to St. Petersburg as court physician. He had a clear and critical mind and did much toward introducing order into special pathology and great simplicity into therapeutics. In his masterpiece, "System der Medicinischen Polizei" (6 Parts, 2d Ed., 1784-1819), he became the author of a new discipline and wrought incalculable benefit through his opposition to the monasteries and to celibacy, witchcraft and exorcism, and through his demands for freer education of youth. Among the eminent practitioners belong also the court physicians *Selle* of Berlin and *Samuel Gottlieb Vogel* of Rostock, who deserve credit for the general introduction of sea bathing and the opening of Doberan (1794).

As we leave German medicine with the beginning of the nineteenth century, we must accord full recognition to the actual investigations of certain men, and also admit that the scientific status of medicine has been unquestionably advanced by the correction of conceptions and a more logical order. But alongside of the relatively small number of men of high merit who monopolized and dominated science, there went a great crowd of the crudest practitioners without knowledge and with a tendency to superstition, who showed the greatest partiality for speculations and catch-words, and on the other hand despised experiment and everything practical. Educated in the adherence to systems, they could contribute nothing to the advancement of medicine because they considered it scarcely capable of improvement. They treated the patient according to fixed rules and if he died they were content with the thought that they had done everything that was possible in their art. One single modest fact is worth more than ten hypotheses, but now they *subordinated experience to theories*, were conscienceless enough to fabricate accounts of cases and successful cures, and discarded the most decisive experiments as soon as they contradicted the prevailing opinion. This was carried so far that one otherwise worthy scholar contended against the truth, proved by a thousand years of experience, that cold locally applied would stop bleeding, because it did not accord with his system. Great thinkers were observed to give orders of which the most miserable field surgeon ought to have been ashamed. Few men could be convinced that all efforts to establish a durable system were in vain and that the path of experience trodden by Hippocrates and Sydenham could alone lead to the goal. Thus the faculty for observing nature was suppressed in most young physicians in their earliest education, and the most prolific source of all progress was cut off.

"If the sons of Æsculapius, they, to whom the muses were never very partial, have always made themselves contemptible by a fruitless conformity to the schools of philosophy of their time, yet one does not find this useless effort in the history of surgery. If the physicians have always sought to cover their want of clear insight with a foolish display of new and pompous, foreign and unintelligible words, yet simplicity and clearness, harmony and true worth made their appearance much earlier in the writings of the great surgeons." (Kurt Sprengel.)

(*To be continued.*)

SOCIETY PROCEEDINGS.

International Medical Congress.

Twelfth Triennial Meeting Held at Moscow, Russia, Aug. 17-20, 1897.

(*Concluded from page 698.*)

"The organic complexity of the cell is the simple and significant principle we bequeathe to the twentieth century," were the concluding words of Prof. S. M. Loukianow's address at the third general session of the Moscow Congress. The biologic autonomy of the cellular nucleus is especially evident in the phenomena of inanition. The cell becomes smaller in inanition, also the nucleus and the nucleolus, but the nucleus does not shrink in proportion to the body of the cell but independently of it, and the nucleolus independently of both. It becomes evident that the body, the nucleus and the nucleolus live a unified life but not one and the same life, a common but not an identical life. He measured 18,000 nuclei, each two diameters, taken from the hepatic cells of white mice (20), subjected to absolute fast or special diet. He found that the nuclei show less loss of volume on a diet of cooked bacon, namely, 6.45 per cent.; on a diet of albumin, 22.04 per cent.; of peptone, 26.48 per cent.; of sugar, 39.19 per cent., and in absolute inanition, 44.56 per cent. He concludes therefore that the hepatic cells are nourished especially at the expense of the fats and albuminoids, while carbohydrates play a secondary part. Thirty-five thousand hepatic cells examined to find the proportions of double nuclei, showed: with normal regimen, 10.49 per cent. binuclear cells; absolute inanition, 13.53 per cent.; sugar, 17.18 per cent.; bacon, 25.01 per cent.; peptone, 27.11 per cent.; albumin, 28.67 per cent. He believes that there is no direct connection between ample nourishment of the entire organism and the multiplication of the neuclei; also that in the nucleus the factors which assure the preservation of its volume in inanition do not fully coincide with the factors which most predispose it to division. He referred to the facts established by Mad. Downarowitsch in regard to the cells of the anterior cornua in complete inanition, when the body had lost 39.8 per cent. in weight, the nuclei had diminished in volume an average of 25.4 per cent. and the nucleoli 42.5 per cent.

PRESENT STATUS OF THE NEW TREATMENT OF POTT'S DISEASE, FORCIBLE REDUCTION WITH TRACTION.

The sensation caused by young Calot's success with his *brusque redressement* has obscured the merits of A. Chipault's less startling method, the first proposed. He straightens the curved spine by traction in narcosis and presented patients thus cured in October, 1895. He restricts the operation to easily reduced cases and aims to secure permanent correction by lacing the apophyses together with wire, including the sound vertebræ above and below (*vide* Journal, pages 505, 607). His success has been constant and permanent to date. Calot reported 204 patients operated (narcosis, traction and direct pressure on the hump) with two deaths within a few days and three in three to four months afterward. He now cures the abscess before operating and if necessary resects some of the posterior processes. Paralysis is an indication for operating, he states, adding that six were cured of the paralysis in these cases of the kind operated on. The result was null in the other two. Twenty of his patients are now walking straight, but most of them still wear the corset. He only allows them to walk when a radiograph shows the reparation of the osseous lesions. T. Jonescu described a mechanical contrivance for traction with which he regulates the force applied. He also replaces the cotton in the corset with a Sayre flannel vest. He has been successful with his modified Calot method, which is illustrated in his *Revista de Chir.*, Bucharest, No. 5. P. Redard reported thirty-two cases successfully treated with another traction device and lever apparatus, that reduces the curvature without direct pressure on the hump, afterward applying a very large plaster cast, illustrated in the *Presse Méd.* of September 4. Bilhaut suspends the child by the feet to apply the corset. Professor Lorenz found paraplegia follow his only attempt, still persisting two months after the *redressement*, as he states in the *Deutsche Med. Woch.* of August 26. All are surprised at the facility with which the spine can be straightened, and many are attempting it, but the medical world at large is waiting to see if nature will repair the loss of substance sufficiently to maintain the spine permanently in the corrected position.

CHRONIC NEPHRITIS.

In the addresses and discussions of chronic nephritis it was stated nephritis is apparently becoming more frequent (Gerhardt) and is often overlooked. Arteriosclerosis produces

renal troubles sometimes at a very early age. Primary contracted kidney is the effect of intoxication, alcohol, uric acid, etc. Scarlet fever and pregnancy only lead to it when there are concomitant causes. It has in turn a toxic effect, uremia. Pressure can not be the cause, as he practiced lumbar puncture once without results. Ewald called attention to the cyclic appearance of albumin in the urine of children otherwise apparently in perfect health, with the exception of slight evidences of dyspepsia. He has had no opportunity to observe whether nephritis follows later. Brault signaled the hypertrophy of the heart which accompanies every nephritis of any duration and dominates the entire pathology of nephritis. It is irreparable and the kidneys only act as long as there is certain compensation of the heart. Crocq considers the desquamation of the epithelial elements the indispensable starting point for the albuminuria. Consequently there can not be physiologic albuminuria, but the cause producing it may be transitory; it may, for instance, be merely hyperemia, active or passive, such as renal congestion from cardiac valvular insufficiency. But generally the cause of the albuminuria is a parenchymatous renal inflammation. Interstitial nephritis is quite different; this is inflammation of the connective tissue of the kidneys. If the epithelium is not involved there is no albuminuria until it is. In the clinical sense, therefore, there are two kinds of nephritis, with and without albuminuria, and these correspond to the anatomic forms, parenchymatous and interstitial. Different causes may produce one or the other; cantharidin, for instance, produces parenchymatous inflammation, also beer; while distilled beverages, lead and uric acid induce the interstitial form. Senator ascribes to arteriosclerosis the origin of many cases of chronic nephritis, and senile chronic cases to insufficient irrigation of the kidneys.

TETANUS IN CHILDREN.

ESCHERICH stated the invariable coincidence in his experience of slight rachitic alterations with idiopathic tetanus, also its restriction to the spring months, and the age from three months to the end of the third year. He does not consider them related, but ascribes both to intoxication from vitiated room air. Some of the fatal cases had hydrocephalus. Laryngospasmus may therefore be a symptom of fresh hydrocephalus, as Golis maintains. In other cases there was thymus hyperplasia, bronchitis or lobular pneumonia, and three had edema of the glottis.

An effective test of the efficacy of serum treatment of diphtheria was reported by FIBIGER, who stated that the one thousand patients admitted for diphtheria at the Copenhagen Hospital during the year were treated with serum or not according as they were received on alternate days and nights. Five hundred had the true Löffler bacillus. The value of the treatment was unquestionable.

A. ESQUERDO advocated bandages for fractures of the inferior member (made of plaster, flannel, cotton or mull, with the first the preference), allowing the patient to walk from the first.

BERTRAN of Barcelona attributes the soothing effect of the heteronymous application of the hand of the operator in certain neuralgias, etc., to the "odic effluvia."

America was well represented, with numerous important addresses and communications, some of which have already appeared in these columns.

The medico-legal significance of the glycogenic function of the liver is much greater than usually realized, as the presence of glycogen in the liver after death shows that the fetus or individual was in normal health at the moment of death. which must have been due to traumatism of some kind. The absence of glycogen is an evidence of diseased conditions. Lacassagne and Martin base this assertion on an examination of 200 subjects, the only qualification to the statement being in case of death from mechanical obstruction in the course of some disease, like tuberculosis. They used Claude Bernard's test, and did not include diabetics in their research, as this test is not reliable with them.

J. F. SUTHERLAND remarked in regard to the alcoholic before the law, that punishment for a crime committed during drunkenness is, in this nineteenth century, a monstrosity. The punishment should be for the drunkenness, which should be considered a misdemeanor. The alcoholic should be regarded by the law in the same light as an insane person. He should be deprived of his civil rights and incarcerated until cured in some special institution.

W. A. MURATOW announced as the result of the necropsy in 123 cases of progressive paralysis at Moscow: 1. Foci of infection in the form of hemorrhage or softening are rare (5 in 123). 2. The local symptoms that appear in the form of epileptic or apoplectic ictus are not due to any new complication, but merely to the invasion of the central convolutions by the inflammation. 3. Clonic convulsions should be considered compulsory movements of ordinary cortical origin. 4. Likewise, the disturbances in the muscle sense and hemianesthesia. 5. The pathogenesis of the appearance of the foci has a certain analogy with the focus infections in encephalus, due in both cases to the direct or indirect action of the focus (excitation, degeneration).

SIR DYCE DUCKWORTH reported several cases of abscesses of the cerebum or cerebellum consecutive to otitis of the middle ear, in which the patient ceased absolutely to breathe from three to five hours before the heart stopped beating. This phenomenon has been previously observed in cerebral injuries from gunshot wounds.

LINNGGREN reported that he had succeeded in transplanting pieces of epidermis on fresh and granulous wounds, which adhered and grew as desired in nearly every case, although they had been kept in sterile liquid-serum from a day to six months.

The parasite of malaria was declared single and unique by Coronado of Cuba, but Thayer of Baltimore, Saharow of Tiflis and Gautier of Moscow asserted the existence of three varieties.

SELECTIONS.

Congenital Absence of Uterus and Vagina.—PLASTIC OPERATION FOR ARTIFICIAL VAGINA, TAKING FLAPS FROM NYMPHÆ AND PERINEUM.—M. A., aged 19 years and single, a native of Gloucester, Mass., was sent to me by Dr. G. N. Jones of that city and gave the following history:

Her father was born in Sweden, her mother in Nova Scotia, the latter having died of cancer of the uterus six years before. With this exception the family history was negative. Of her three sisters, one was married and had a child; another, 16 years old, had menstruated regularly for four years, and the third, then 14 years old, had not at that time had her catamenia established, but since has menstruated regularly.

The patient had never been in rugged health, had suffered with a purulent discharge from the left ear since 1 year of age, and had had measles and chickenpox at 7 to 8 years of age. She had been under medical treatment for the preceding four years for general weakness, headache, weak eyes (for which she had been wearing glasses with benefit), temporal headaches, sore throat, loss of appetite and shortness of breath. While under treatment she had improved; at the time of my first consultation had a fair appetite and digestion, and her chief complaints were a weak back and the fact that she did not menstruate. There had been no menstrual molimen whatever.

Physical examination showed a well developed, rather poorly nourished woman above the average in height, of light complexion, the hair of the head long and thick, voice feminine, breasts each having a well-developed gland with a few follicles showing in the areolæ about the inverted nipples, hips large and pelvis of female type.

Genital organs.—An abundant growth of hair on the mons and the outer surface of the labia majora. Labia majora, labia minora, vestibule and clitoris well developed; meatus urinarius and urethra of large caliber, taking a sound fourteen millimeters in diameter without much stretching; natural diameter about eleven millimeters. Hymen absent. Where the introitus vaginæ is normally situated the mucous membrane was redundant and wrinkled, and in the center was the opening of a small pocket four millimeters in diameter. This pocket had a depth of one and one-half centimeters, its long axis corresponding with the axis of the normal vagina, and it was apparently lined with mucous membrane. A small amount of milky-white secretion could be expressed from it. Orifices of vulvovaginal glands large and normally placed. In other words, with the single exception that the introitus vaginæ and hymen were absent, the external genitals were normal.

As a bimanual examination with a finger in the rectum failed

to reveal the presence of the uterus or other internal organs of generation the patient was sent to St. Elizabeth's Hospital, where an ether examination was made on the following day. Two of my colleagues on the gynecologic staff of the hospital kindly saw the case with me. We all examined bimanually with the forefinger in the rectum, also with the little finger in the bladder; then with a sound in the bladder and a hand on the abdomen. The abdominal walls where thin and lax, the intestines undistended and, the rectum and bladder being empty, all the conditions for practicing the touch were favorable. No uterus, ovaries or tubes or any thickened tissues that might represent any of those organs, or the occluded vagina, were to be felt in the pelvis. The bladder and rectum seemed to be of normal size, shape and situation. The septum between the bladder and rectum was thin.

The condition of her genital organs were explained to her and she was told that possibly a serviceable vagina could be made and decided to have the operation performed.

Operation, March 28, 1894.—The object of the operation was to separate the bladder from the rectum by incising the cellular tissue between these organs and then to cover the raw surfaces forming the walls of the cavity so made with mucous membrane or skin, utilizing three flaps; one taken from the fourchette and perineum and one from each of the labia minora. The vulvar hair was shaved and the rectum thoroughly irrigated with corrosive, and the orifice of the rudimentary vagina prolonged at each end so that it measured about three centimeters in length, splitting the rudimentary vagina into halves. With a finger in the rectum and a sound in the urethra for guides, the recto urethral septum was split by dissecting with the scissors and finger for a distance of five centimeters. At that point the finger in the wound was apparently separated from the intestines by a sheet of peritoneum only and, practicing the bimanual touch again, it was impossible to discover the presence of any tissue that might represent the uterus, ovaries or tubes.

In order to cover the raw surfaces formed by the dissection, flaps were formed as follows: the nymphæ were cut off and then incisions through the mucous membrane made. The two lateral flaps formed in this way were dissected free and by so doing the nymphæ were split from their posterior aspect and unfolded, as it were.

The posterior flap was formed by dissecting deeply the tissues of the fourchette and perineum, so that this flap could be dragged upward and inward to cover the posterior surface of the new vagina. The strip of mucous membrane on this posterior wall that had been half of the rudimentary vagina was dissected away and the posterior flap anchored by suturing its tip at the uppermost part of the new vagina with a catgut stitch. In the same manner the two lateral flaps were disposed of by stitching their tips at the apex of the vagina. The little strip of mucous membrane on the anterior wall from the rudimentary vagina was utilized by stitching the lateral flaps to its edges. The operation was completed by sewing the edges of the mucous membrane at the stumps of the nymphæ and at the places where the three flaps came into apposition with fine interrupted sutures of catgut. At the close of the operation there was a small raw surface, about one centimeter in diameter, at the highest part of the wound, that it was impossible to cover. The vagina was packed lightly with iodoform gauze and the patient put to bed. The after-treatment consisted in keeping the vagina packed with iodoform gauze. The left flap broke loose on the third day, but by carefully applied pressure it glued on again. The house surgeon manufactured a dilator out of a rubber finger cot stuffed with cotton. This was worn constantly, being kept in place by a T-bandage. On May 1 the vagina measured two and one half centimeters in diameter and four and one-half in depth. The patient left the hospital on May 2, was not seen again until two years later, when she appeared at my office with her husband. She reported that she had gained very much in health and had been perfectly well, with the exception of weakness of the back after exertion and of a recent attack of indigestion; that she had then been married two months and a half; that she had had sexual intercourse regularly since marriage and that the intercourse was attended by sexual feelings and gratification. Her husband also said that, for his part, coition had been entirely satisfactory.

She now called my attention to a bunch in the right side of her abdomen, which she had first noticed before the operation; but as it had never given her any discomfort she had not spoken of it. It had moved lower down in the abdomen since the operation and since her marriage had increased in size. Examination showed a tumor the size and shape of a large kidney situated in the false pelvis on the right side, the hilum being toward the vertebral column. Its upper border, with the patient on her back, was on a line drawn from the umbilicus to the right anterior superior spine of the ilium. It slipped from under the hand in the manner characteristic of movable kidney, its mobility being limited above just beyond the level of the umbilicus, on the left at the median line and below at Poupart's ligament. Pressure on the tumor caused "a sickening sensation." Palpation in the right flank failed to detect the presence of the kidney in its normal situation. The urine was normal. It had been increased in amount, of late, she said. There had been no pain or dragging sensation in the region of the tumor.

The tumor was surely not in its present situation at the time of the ether examination two years before or it would have been felt at once by the examining hand on the abdomen. Bimanual examination with a finger in the vagina and with a finger in the rectum showed that the tumor had no pelvic connections that could be felt and confirmed the previous diagnosis of absence of the uterus.

Following the foregoing report the author commented briefly on the various operations that have been performed for the formation of an artificial vagina. The first of these was done by Fletcher in 1831 and Amussat in 1832, for the purpose of allowing escape to the retained menses. These operations were but blunt dissections in the recto-vesical system. In 1883, Credé formed a new vagina by using one large skin-flap from one of the labia majora, while Picqué took flaps from the anterior wall of the vestibule and from the perineum. Kustner, Mackenrodt, Schwartz and others modified these. Other cases of plastic operation for artificial vagina have been published by Rosciszewski in 1894, Fenger in 1886 and Roux in 1891.

The advantages of a plastic operation for artificial vagina over the plug operation are obvious both in cases of congenital and acquired absence of the vagina. Where the labia minora are of sufficient size they seem to me to offer the most available means of covering the walls of a new vagina, as entailing less mutilation than would be the case with flaps taken from the labia majora or vestibule, and I should agree with Fenger that a bilateral operation is preferable to a unilateral one.

Complete absence of the uterus has been demonstrated by anatomic proof only in cases of acephalic monsters or fetuses with spina bifida or other malformations incompatible with prolonged life. In all other cases a small bit of connective tissue, a knot of muscle or band of connective tissue, if nothing more, as representing rudiments of the uterus, has been shown to exist on the cadaver.

A small piece of muscle without the shape of a uterus, or a band of connective tissue across the pelvis, can not be called a uterus either in an anatomic or physiologic sense, and such a state of affairs is of interest only from the standpoint of embryology; therefore, we are justified in speaking of women possessing such rudimentary structures as cases of absence of the uterus. The case just reported is an example of a not very rare class, *i. e.*, normal feminine habitus, well-formed hips, breasts and external genitals, hair of the head long, normal pubic and axillary hair, and feminine voice, with absence of uterus and more or less atresia of the vagina. These individuals are usually healthy unless the ovaries are present and functionally active, in which case they suffer from menstrual pain, sometimes so severe as to necessitate oöphorectomy.

Without aiming at absolute completeness, owing to the inaccessibility of some of the sources of information, I have been able to collect the references to 360 cases of absence of the uterus reported by 239 authors from earliest times up to the present. Roughly we may say about 300 cases in the last century. Cases occur in the literature of all civilized countries. I have examined a majority of the 239 references, and have found among them the records of only thirty-five autopsies where this condition was present. Of these, twenty-four were on the bodies of adults and two on girls 10 and 12 years old respectively, the rest being on monstrosities and fetuses with absence of other organs, making prolonged life impossible. In all of the autopsies on the bodies of adults and girls there were noted in every case rudimentary tissues representing the uterus, generally one or two little knobs of tissue the size of hazelnuts or a thin band between the bladder and rectum. The ovaries were found to be present in all the cases but six, and five of these were reported in general terms only. The tubes were present in all cases but six, though often without any canal. A very large proportion of the reports I have exam-

ned are of cases similar to mine, *i. e.*, adult women, feminine habitus, normal external genitals and breasts. A very few cases having abnormal external genitals and the male type of breast, with absence of pubic hair, are reported. The vagina was generally present as a short pouch, though often entirely wanting. Absence of the vagina alone, the uterus being present, is a much more common anomaly than absence of the uterus.

In a considerable number of cases of absent uterus and vagina the urethra has been found to be of large caliber and in several cases coitus has been practiced through it without the knowledge of the patient that anything was wrong in this respect. Most writers hold that the large caliber in these cases is due to attempts at coitus, but in view of the fact that there are on record many cases of absence of the vagina in unmarried women of good character where the urethra has been found large, *e. g.*, my case above reported, it seems that the explanation is to be sought rather in some developmental defect.

The anomaly of absence of the uterus is due to a lack of fusion and subsequent atrophy of the ducts of Müller, a process which ordinarily takes place at the end of the third month of fetal life. It is well established that these ducts, under normal conditions, fuse in their middle and lower course, the process proceeding from above downward to form the uterus and vagina, whereas above the separate non fused ducts form the Fallopian tubes. The external genitals, the lower part of the vagina, as well as the urethra and vesical trigone, on the other hand, are formed from the urogenital sinus and the genital tubercle, furrow and fold. A partial coalescence of the Müllerian ducts accounts for the reported cases of double vagina and double and bicorned uterus. The derivation of the hymen is still in dispute. It is known that the hymen develops late in fetal life, the nineteenth week, and there seems every reason to believe that it is formed from the same embryonic structure as the vestibular vagina, *i. e.*, the urogenital sinus. Therefore, we should not expect to determine whether it would be likely to be present in any given case of absence of the vagina. As a matter of fact, it is reported as present in a majority of cases, as is also some sort of a vaginal canal. This canal must be thought of as a persistent urogenital sinus rather than a Müllerian vagina, because in the process of development the Müllerian ducts coalesce from above downward. The urogenital sinus develops from below—the urethra and rectum being set off from the vagina—and it is not difficult to understand how, in one case, the lower vagina fails to develop, giving rise to hematocolpus if the uterus is functionally active, or, in another case, the uterus and Müllerian vagina being absent, that the urogenital sinus forms an urethra of large caliber and a hymen.

It would seem as if inheritance had something to do with absence of the uterus. Squarey reported the cases of three sisters who had never menstruated, three of whose aunts were sterile. Phillips speaks of two sisters, both married, with congenital absence of the uterus. Nelson reported absence of the uterus in three of a family of five sisters. All three had sexual desires. Of the two sisters with uteri, one had a family of four children, the other was 17 and unmarried. Sexual appetite was present in most of the cases reported. Menstrual molimina sometimes and sometimes not, but generally present where the ovaries could be distinguished.

It is seldom that a proper diagnosis can be made without an anesthetic. The thinness and condition of laxity of the abdominal walls are important factors in determining the accuracy of the examination. In some of the reported cases the diagnosis was confirmed by operation, as in several where oöphorectomy was practiced for severe menstrual pains.—*An abstract of a paper by* Dr. W. L. BURRAGE *in American Journal of Medical Sciences.*

The Organization and Support of Public Medical Libraries.—Dr. George M. Gould recently read before the American Association of Medicine of Philadelphia the following:

Every year many private medical libraries, innumerable medical books and journals, the gatherings of physicians during a lifetime, are destroyed, scattered and wasted. At the same time thousands of cities and villages are without public medical libraries, or the few that exist are not made the depositories of these valuable books. In the city and village centers the physicians are individually and singly spending large sums of money for medical literature, and much of this money, if spent in a systematic and organized manner, could be saved, would accomplish more good for the participating individuals, and would become a growing power for professional progress and benefit.

All that is wanting is the unitizing spirit to bring about common action. No argument is needed to convince us of the great value of a reference-library of medical books. Why then should this literature and money be longer wasted? Every member of the Academy should constitute himself a committee of one to arouse public spirit, to encourage the formation and support of public or society medical libraries. It is, indeed, a function peculiarly appropriate for the Academy as a whole to undertake. Moreover, every established medical library is constantly receiving, and with increased vigor would receive still larger numbers of duplicates, which by an easily devised system of exchanges and gifts, might be utilized to complete the files and fill the shelves of other libraries. To illustrate the effectiveness and success possible in the direction suggested, I may refer to an attempt I have made. With true professional spirit the editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION courteously placed his columns at my disposal, and I published therein lists of duplicates, gifts, exchanges, etc., of books and periodicals that were sent me by individuals and by librarians. Within the past year, as a result, I have been able to help a number of libraries to fill their shelves. With some good will and a very small expense for postage and typewriting, 3,934 journals and pamphlets, and 1,921 bound volumes, most of them of great value, have been rescued, preserved, and for all time, placed at professional disposal. It is, however, a work requiring more than individual effort, and should become the function of some corporate organization. The unexpected success of my individual labor only shows what wonderful results might follow common professional action. If anything good were to be hoped from American politics, the existing organization of the Surgeon-General's Office might be made a sort of clearing-house for gathering medical literature, and for founding and filling public medical libraries all over the United States. In pure science the Smithsonian Institution already exercises some such function, and it is one of inestimable value to the nation and to science. In other countries the medical literature we sadly need is to be had almost or entirely for the asking, just as with us it is also going to waste. To make the plan effective international organization is needed, and can hardly be brought about except by governmental agencies. Scarcely a complete set of the French *Theses* exists in this country, and yet I have seen such sets offered for sale for a few dollars. Two or three years ago, at a well advertised public auction-sale in the city of Philadelphia, I bought a complete set of Virchow's *Archiv* for $3.50. Another set was advertised by a Boston dealer the same week as a remarkable bargain for $185. Publishers' remainders of old editions are constantly being ground up into paper pulp, and the *Transactions* of hundreds of medical societies are rotting in store-rooms and cellars in Europe and America, while all the time the public medical libraries of each country are suffering because they can not secure the unutilized literature of the other. I allude to these instances merely in proof of the fact that from lack of organization we are neglecting unique opportunities of professional education and progress.—*Bulletin American Academy of Medicine.*

Toxin and Antitoxin of Tetanus of the New York City Health Department Laboratory.—Dr. Alexander Lambert, a bacteriologist having a special detail in the direction of the immunization against tetanus, has written for the *New York Medical Journal* June 5, the fullest American account of this procedure that we have yet seen. His article closes with a bibliography that includes no less than eighty-one titles, a large proportion of which is in the German and French tongues. Dr. Lambert has collected 114 cases, whose mortality under antitoxin has been 40.3 per cent. The tetanus antitoxin is prepared in the same manner as the diphtheria antitoxin, by inoculating the tetanus toxin in increasing doses into horses. The toxin is grown in bouillon under hydrogen, and after ten or fifteen days filtered through porcelain, and the germ-free filtrate is used for the inoculations. The horses receive half a cubic centimeter as the initial dose of toxin, and this dose is increased as rapidly as the horses can stand it until they support seven to eight hundred cubic

centimeters or more at a single dose. After some months of this treatment the blood of the horse contains the antitoxin in sufficient amount for therapeutic use. When the animals' temperatures are normal and they have recovered from the dose of toxin last given, they are bled into sterile flasks and the serum collected. The serum contains the antitoxin and is tested on white mice or guinea pigs.

The New York Health Department has at present two horses well immunized against tetanus, and furnishes serum of the strength of one to four hundred million, that is, one cubic centimeter will protect four hundred million grams of white mice against a three-to-four-day fatal dose of tetanus toxin. Reckoning in antitoxic units, twenty cubic centimeters of serum will contain eight thousand antitoxin units, an antitoxin unit in tetanus being the amount of serum necessary to protect one million grams of test animal. The serum is supplied in 20 cubic centimeter bottles and should be injected in 10 to 20 cubic centimeter doses. In severe cases the patient should receive 50 cubic centimeters in the first twenty-four or thirty-six hours, and these 10 to 20 cubic centimeter doses repeated once or twice each day during the following four or five days or longer, according to the course of the disease. The circular accompanying the bottles explains more fully the proper method of procedure.

As has been shown by Roux and Calmette, the antitoxic serum has no direct destructive action on the toxin itself, but through some unknown action on the body cells the serum prevents the toxin from exerting its destructive action. Behring's first idea that there was a direct destructive action between the antitoxin and toxin or some neutralizing effect, such as occurs between an acid and an alkali, has been shown to be incorrect. As Buchner also shows there is no destructive action of the antitoxic serum on the toxin either outside or within the body, the action seeming to be one which, by producing certain changes within the cells, renders the action of the toxin inert. Tizzoni concludes that the blood serum of inoculated animals does not act as a remedy which neutralizes in the organism a certain active principle of disease and directly counteracts certain functional changes, but it acts, in all probability, in curing tetanus by immunizing the parts of the body not already tetanized and so limits the tetanus to local form. The New York Board of Health supplies its antitoxin to charitable institutions free of charge, but to others the cost is $3.00 per vial containing 20 cubic centimeters. The serum should be injected as early as possible, as the dose required to neutralize tetanus toxin absorbed increases with great rapidity with each hour's delay.

The initial dose in every case in an adult should be at least one vial or 20 c.c. When the treatment is begun at the first appearance of tetanic symptoms and these do not point to a very severe infection, and especially when the incubation period has been long, say two weeks, the same quantity or one-half the quantity, according to the results, should be repeated at intervals of form six to twelve hours during the four following days.

London Experience in the Antitoxin Treatment of Diphtheria.—The report of the medical superintendents upon the use of antitoxin in the treatment of diphtheria in the Hospitals of the Metropolitan Asylums Board during the year 1896, which has just been issued, constitutes the most exhaustive and elaborate statistic study of the antitoxin treatment of diphtheria which has yet appeared.

The medical superintendents thus sum up the results of their clinic and statistic observations. They find that the improved results in the diphtheria cases treated during the year 1896 are: 1, a great reduction in the mortality of cases brought under treatment on the first three days of illness; 2, the lowering of the combined general mortality to a point below that of any former year; 3, the still more remarkable reduction in the mortality of the laryngeal cases; 4, the uniform improvement in the results of tracheotomy at each separate hospital; 5, the beneficial effect produced on the clinical course of the disease. "We have had, in fact, somewhat better results to record for 1896 than we had for 1895; and in view of the extended experience gained during the past year, together with the additional facts concerning the post-scarlatinal cases for 1896, we feel that we are fully justified in the favorable opinion we expressed last year on the value of antitoxin in the treatment of diphtheria."

The reporters further emphasize the importance of early administration and the trivial character of the secondary effects, maintaining their opinion that "in the antitoxic serum we possess a remedy of distinctly, we would now say, much greater value in the treatment of diphtheria than any other with which we are acquainted."—*The London Therapist.*

Purulent Contamination of Milk.—Dr. W. R. Stokes, bacteriologist of the health department of Baltimore, and Dr. A. Wegefurth of the same city, call attention to the use of the microscope for detecting the contamination of milk by pus. The presence of this objectionable product indicates an inflammatory disease of the udder of the cow supplying the milk, a condition sometimes spoken of as "garget." The writers believe that they can trace to this condition a series of cases of mild gastro-intestinal irritation. Inflammation of the udder is a not infrequent condition among dairies that supply milk to our cities and institutions. The milk yielded by such diseased cows has often been found to contain many pus cells and the allied organisms of suppuration. The study of the epidemic of gastro intestinal disease of these writers and of other testimony in the same line, lead us to the belief that garget milk is a source of danger to infants and children. Whenever suspicious circumstances lead to the use of the microscope and an examination is made of the centrifugalized sediment of the milk that reveals the presence of an excessive amount of pus, there should be instituted a careful examination of the herd whence the milk has been obtained. The chances of infection by the milk of a herd can be minimized by a microscopic examination of the centrifugalized specimens of each cow's milk and the exclusion of any and all cows that are found to have pus-producing udders. The writers suggest that, in the absence of a better guide, the exclusion of a cow be based upon the presence of an average of more than five pus cells to the field of a twelfth-inch oil immersion lens. The writers point to the high mortality in their city by cholera infantum, a disease that is especially prevalent among children that are fed upon cows' milk, and their experience points to the necessity of a closer examination of the herds of dairies that send their product to our cities, if we are to expect a reduction in the summer mortality by intestinal derangements. It is not their contention that untested milk is of necessity dangerous, but the use of the test is prompted by the almost universal desire that exists to raise the standard of that important food substance of the young, especially in the summer season.—*Medical News.*

NEW INSTRUMENTS.

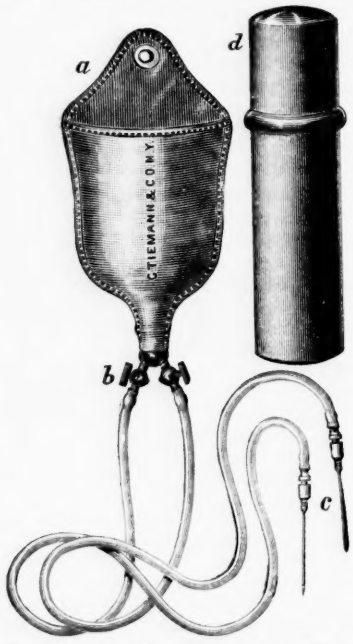
A SUBCUTANEOUS SALINE SYPHON SYRINGE.

BY HORACE FOX, M.D.
BATH, MAINE.

This simple instrument is brought to the notice of the profession for the following reasons, to-wit: It is compact, therefore it can be readily carried in an ordinary physician's bag and constitute a part of the physician's armamentarium. It is simple in construction, therefore there is practically nothing to hinder it from being in good working order at any and all times. Its parts can be quickly, thoroughly and easily adjusted, therefore it can be made ready for use at a moment's notice. When its parts are properly adjusted it is impervious to air. It can be made thoroughly aseptic by boiling or immersing in an antiseptic solution without injury to any of its component parts. The fluid can be injected simultaneously into different portions of the body with great ease. One quart of the normal saline solution can be subcutaneously injected in about fifteen minutes, provided its distribution and absorption is assisted by constant and gentle manipulations. The pressure and flow of the fluid can be controlled either by the stop-cocks or by raising the reservoir to the desired height, or by both.

To describe the instrument: The reservoir (*a*) is made of soft catheter rubber and will hold just one pint. Its upper portion contains a small perforated flap by which the instrument may be suspended. Into the lower portion of the reservoir is snugly fitted a hard-rubber tube (*b*) which is forked at its lower end and each prong of the fork contains a stop-cock. Upon each prong of the fork is adjusted a soft catheter rubber tube three feet long. There are two hollow metal fittings, the upper ends

of which are fitted into the lower ends of the soft catheter rubber tubes, while the lower ends of the metal fittings are threaded and upon which are screwed two large size hypodermic needles (*c*). The reservoir and hard-rubber fork, the soft catheter rubber tubes and metal fittings need not be separated unless so desired; they can then be rolled up and placed in the



hard rubber case, while the hypodermic needles may be secured safe and firm by being screwed into two tubes in the top part of the box or case (*d*). The hard-rubber box is round and is about seven inches long and two inches in diameter, therefore it takes up but little space and yet permits of ample room for the instrument.

The instrument was made for me by Messrs. George Tiemann & Co., of New York City and they have carried out my plans accurately and thoroughly.

A NEW OBSTETRIC FORCEPS AND AN AXIS-TRACTION FORCEPS.

BY A. B. SPÄCH, A.M., M.D.
CHICAGO.

In the JOURNAL of December 1896, I published a description of a "New Obstetric Forceps." In response to numerous requests for a detailed account of the axis-traction features of my forceps and under this stimulus, I have added to and recast what has already been published, making the description

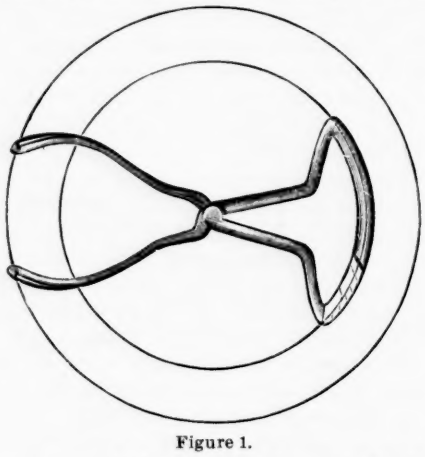


Figure 1.

entirely a new one. A glance at Fig. 1 reveals the forceps with two circles described around it, having a common center, which is at the lock. A sector of the larger circle is formed by the blades and an arc of the same circle. Another is formed by the handles and an arc of the smaller circle, or an equal one by the blades and an arc of the same circle passing through the blades, where they are farthest apart. Thus, as the blades are separated, the distances between them are accurately read off on the handle of the lower blade, which is marked off in centimeters and inches. At a glance the obstetrician can measure the diameter of the child's head. The forceps serves here as an accurate cephalometer.

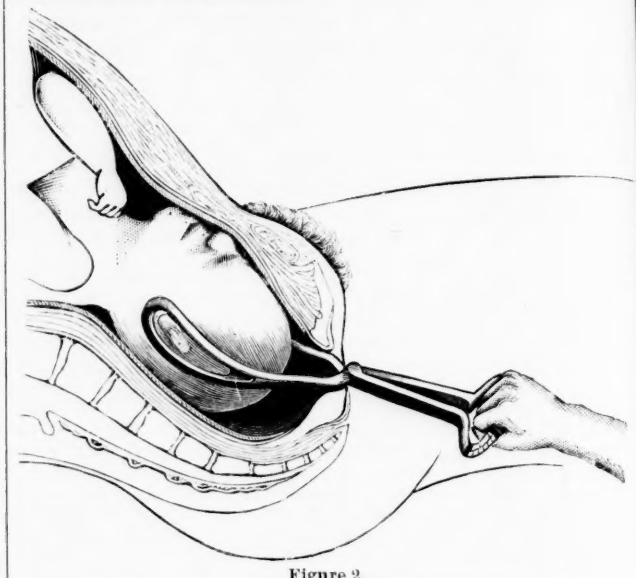


Figure 2.

Intermittent traction can be made without producing undue compression of the fetal head. Fig 2, represents the forceps applied in occipito-posterior positions, the grasp of the hand and the direction of traction after the head has made descent into the pelvis. In Fig. 3, is shown the axis-traction forceps with details of the lock of the axis-traction rods. These rods are applied after the forceps is adjusted to the fetal head. The blades are secured firmly by the clamp at E, on the handles. The traction rods, one at a time, are now attached to the blades at A. Further adjustments are made at C, and the handles at F. Motion is thus freely secured in all directions. After the head is drawn down into the pelvis, the

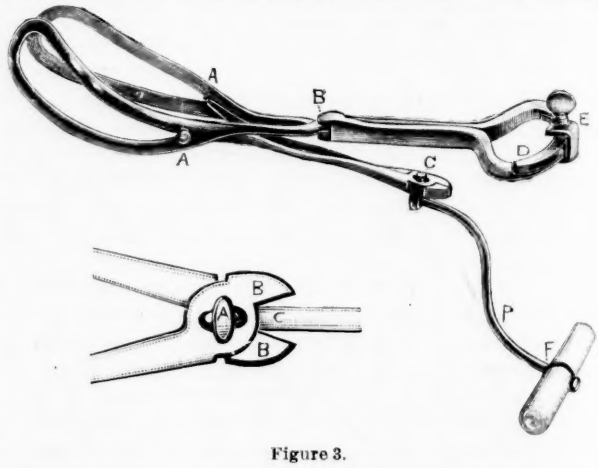


Figure 3.

curved rod is turned at right angles to the axis-traction rods and together with them quickly disengaged. The clamp at E is then removed and the labor is then completed as seen in Fig. 2.

To summarize: 1. The forceps accurately measures the fetal head. 2. Its application is no more difficult than any other instrument. The axis-traction rods are applied more readily than in any other instrument. 3. And last, greatest of all, intermittent traction can be made without crushing the fetal head.

The lock and features of the blades are unique and new. This instrument is manufactured by Fred Haslam & Co., Brooklyn, N. Y.

6629 Harvard Avenue.

A BILL to Establish a Department of Public Health and to Define its Duties.

Be it Enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

SECTION 1. That there shall be established a Department of Public Health, the duties of which shall be to collect and diffuse information upon matters affecting the public health, including statistics of sickness and mortality in the several States and Territories; the investigation by experimental and other methods of the causes and means of prevention of disease; the collection of information with regard to the prevalence of infectious, contagious and epidemic diseases both in this and other countries; also the causative and curative influences of climate upon the same; the publication of the information thus obtained in a weekly bulletin; the preparation of rules and regulations for securing the best sanitary condition of vessels from foreign ports, and for prevention of the introduction of infectious diseases into the United States, and their spread from one State into another, which rules, when approved by the President of the United States, shall, in so far as they are consistent with the existing laws, be adopted and enforced as quarantine regulations at the various ports of entry in the United States, and so far as applicable to interstate commerce to prevent the spread of disease from one State or Territory into another or the District of Columbia, be, and become additional regulations thereof; the advising and informing the several departments of the government on such questions as may be submitted by them to it, or whenever in the opinion of the Department such advice and information may tend to the preservation and improvement of the public health.

A special report of the said Department of Public Health, relative to such action as will most effectually protect and promote the health of the people of the United States may at any time be required by the President of the United States.

SEC. 2. That the Department of Public Health shall be under the control and management of a Commissioner of Public Health; said Commissioner of Public Health shall be appointed by the President of the United States, by and with the advice and consent of the Senate, and his term of office shall be six years; he shall be a regularly educated physician holding a diploma conferred upon him by a legally incorporated medical college in the United States; he shall have had at least ten years' experience in the practice of medicine, and shall be learned in sanitary science, and shall hold a membership in one or more reputable sanitary or medical associations in the United States.

He shall be entitled to a salary of $6,000 per annum, and his necessary traveling expenses.

That the Commissioner of Public Health shall semi-annually on the first Tuesdays of April and October of each and every year, and at such other times as he may designate, call to meet in the city of Washington, D. C., an advisory council to be composed of the secretary or executive officer of each State and Territorial board of health, and one officer learned in the law, detailed by the Attorney-General of the United States from the Department of Justice; and that the necessary traveling expenses of the said advisory council incident to their attendance on the meeting of the said council shall be paid on vouchers to be furnished by the Secretary of the Treasury, said meetings not to include more than six days at each session, unless a longer continuance shall be authorized by the President of the United States.

That the Commissioner of Public Health may appoint an Assistant Commissioner of Public Health, who shall be a physician in good and regular standing in the medical profession, and skilled in sanitary science, and fix his salary at not to exceed $3,500 per annum and all actual and necessary traveling expenses incurred in the performance of his duties as Assistant Commissioner in said Department. All officers and persons in the service of the United States, detailed to perform any duty under the provisions of this act, or any existing act, of the Congress of the United States providing for quarantine against diseases, or to prevent diseases from spreading within the United States, shall not receive any additional compensation except for actual and necessary expenses incurred in the performance of such duties, such expenses to be approved by the Commissioner of Public Health or his assistant, and to be paid on vouchers provided by the Department of the Treasury.

It shall be the duty of the Commissioner of Public Health to preside at all meetings of the said advisory council, and in case of his absence on account of illness or any other unavoidable cause, it shall be the duty of the Assistant Commissioner of the Department so to preside.

SEC. 3. That the Department of Public Health hereby created shall succeed to all the powers and duties now and heretofore conferred upon the Marine-Hospital Service, or any officer thereof, by any law of Congress, except as hereinafter provided, and shall occupy the building now occupied by the Marine-Hospital Service for its offices, and shall have under its exclusive control and management all offices, officers, laboratories, appurtenances and property of whatever name and nature, which are lawfully in possession of the said Marine-Hospital Service at the time of the passage of this act, but it is hereby provided that there shall be in said department a bureau to be known as "The Bureau of the Marine-Hospital Service," which shall be under the exclusive control of the Commissioner of Public Health, and all laws governing the appointment to official positions in said Marine-Hospital Service, and to promotions in said service, shall continue in full effect, and all funds now or hereafter appropriated for the Marine-Hospital Service by Congress shall continue to be disbursed under the supervision of the Commissioner of Public Health by the direction of the Secretary of the Treasury until otherwise provided by law, it being the intent and purpose of this act to continue the Marine-Hospital Service and to confer all duties relating to quarantine and the public health upon the department hereby created.

SEC. 4. That whenever any department of government, or the executive of any state or territory, or the Commissioners of the District of Columbia, or the health authorities of any State, shall request information from the Department of Public Health in regard to any matter pertaining to the protection or promotion of the public health, said department shall promptly furnish such information as it may have on record, together with any necessary or pertinent advice; and whenever any information shall be received by the department which the interests of the public health require should be promptly communicated to any department of the government, or to any state officer, such information shall be forthwith furnished to the respective department or officer.

SEC. 5. That the department shall take such action, by adopting and enforcing such rules, and by correspondence or conference, as will tend most effectually to secure the coöperation of State, municipal, and local boards of health in establishing and maintaining an efficient and accurate system of notification of the existence and progress of contagious and infectious diseases, and of vital statistics in the United States, and said department shall also, by coöperation with the proper health authorities of foreign nationalities and municipalities, endeavor to extend to the United States a reliable system of international notification of the existence and progress of such diseases as cholera, yellow fever, typhus fever, smallpox, bubonic plague, or any other dangerous or contagious disease which may, in the judgment of the department, seem advisable to consider.

SEC. 6. That in sending notifications to, and receiving reports from, the different States or Territories in the United States, the department shall conduct all correspondence through the State and Territorial health authorities, and all information intended for local use received by the State and Territorial health authorities, shall by them be forwarded to the local boards of health, or health authorities, within their jurisdiction, and all reports and information received from local health authorities, and local boards of health, shall pass through the office of the State or Territorial health authorities to the said Department of Public Health.

SEC. 7. That the department shall, when in its judgment it may deem it necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of infectious and contagious diseases into the United States from foreign countries, or into one State or Territory, or the District of Columbia, from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the said department subject to the approval of the advisory council, and the President of the United States, and enforced by the sanitary authorities of the States, Territorities, municipalities, and local boards of health, where the State, Territorial, municipal, or local health authorities will undertake to execute and enforce them, but if the State, Territory, municipal, or local health authorities shall fail or refuse to enforce such rules and regulations, the President of the United States shall execute and enforce the same, and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose.

SEC. 8. That it shall be the duty of said department to perform all the duties in respect to quarantine and quarantine regulations, which are provided for by this act, or by any existing act of the Congress of the United States, and all duties in regard to the prevention and spreading of diseases throughout the United States as provided for in this act, and to obtain

information of the sanitary condition of foreign ports and places from which contagious and infectious diseases are, or may be, imported into the United States, and to this end the consular officers of the United States at such ports and places as shall be designated by the Commissioner of Public Health, shall make weekly reports to the department of the sanitary condition of the ports and places at which they are respectively stationed, according to such forms as the Department of Public Health shall prescribe; and the Commissioner of Public Health shall also obtain, through all sources accessible, including State and Territorial sanitary authorities throughout the United States, weekly reports of the sanitary condition of ports and places within the United States, and shall prepare, publish, and transmit to collectors of customs, and to State and Territorial boards of health, and through them to municipal health officers, and other sanitarians, weekly abstracts of the consular sanitary reports, and other pertinent information received by him, and shall also, as far as he may be able, by means of voluntary coöperation of State and Territorial authorities, and through them municipal authorities, public associations, and private persons, procure information relating to the climatic and other conditions affecting the public health.

SEC. 9. That it shall be unlawful for any merchant ship or other vessel, from any foreign port or place, to enter any port of the United States, except in accordance with the provisions of this act, and with such rules and regulations of State, Territorial and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof, shall, upon conviction of the Master thereof, forfeit to the United States a sum to be awarded in the discretion of the court, not exceeding $5,000, which shall be a lien upon said vessel to be recovered by proceedings in the proper district court in the United States. In such proceedings the United States District Attorney for such district shall appear on behalf of the United States, and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

That any vessel, at any foreign port, clearing for any port or place in the United States, shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer, where such officer has been detailed by the President of the United States for that purpose, a bill of health in duplicate, in the form prescribed by the Department of Public Health, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers and crew; and said consular, or medical, officer is required before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulations be allowed, to be accounted for as is required in other cases.

The President of the United States in his discretion is hereby authorized to detail any medical officer of the government to serve in the office of the consul at any foreign port for the purpose of furnishiug information, and making the inspection, and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port, without such bill of health, and entering any port of the United States shall, upon conviction of the Master thereof, forfeit to the United States not more than $5,000, the amount to be determined by the court, which shall be a lien on the same to be recovered by proceedings in the proper district court of the United States. In such proceedings the United States District Attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

SEC. 10.—That the Commissioner of Public Health shall from time to time, issue to the consular officers of the United States and to the medical officers serving at any foreign port, and otherwise make publicly known, the rules and regulations made by him, to be used and complied with by vessels in foreign ports, for securing the best sanitary condition of such vessels, their cargoes. passengers and crew, before their departure for any port in the United States, and in the course of the voyage; and all such other rules and regulations as shall be observed in the inspection of the same on the arrival thereof at any quarantine station at the port of destination, and for the disinfection and isolation of the same, and the treatment of the cargo and persons on board, so as to prevent the introduction of cholera. yellow fever, leprosy, bubonic plague, smallpox, or other contagious or infectious diseases; and it shall be unlawful for any vessel to enter said port to discharge its cargo or land its passengers except upon a certificate of the health officer at such quarantine station, certifying that said rules and regulations have in all respects been observed and complied with, as well on his part as on the part of the said vessel and its master, in respect to the same and to its cargo, passengers and crew; and the master of every such vessel shall produce and deliver to the collector of customs at said port of entry, together with the other papers of the vessel, the said bills of health required to be obtained at the port of departure, and the certificate herein required to be obtained from the health officer at the port of entry; and that the bills of health herein prescribed shall be considered as part of the ship's papers, and when duly certified to by the proper consular officer, or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

SEC. 11.—That the Commissioner of Public Health shall, and at such times as he may deem necessary, examine the quarantine regulations of all State and municipal boards of health, or detail an officer of the said department to make such examinations, and shall coöperate with and aid all State, municipal and local boards of health in the execution and enforcement of the rules and regulations made by the Department of Public Health under the provisions of this act, or any other act of the Congress of the United States providing for a quarantine against disease, and to prevent the introduction of contagious and infectious diseases into the United States from foreign countries, and into one State or Territory, or the District of Columbia, from another State or Territory, or the District of Columbia; and all rules and regulations made shall operate uniformly and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State, Territorial or municipal authority, where such regulations are, in the opinion of the Commissioner of Public Health, necessary to prevent the introduction of contagious and infectious diseases into the United States from foreign countries, or into one State or Territory, or the District of Columbia, from another State or Territory, or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State, Territory, or municipality which, in the opinion of the Commissioner of Public Health, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia, from another State or Territory or the District of Columbia, the Commissioner of Public Health, if in his judgment it is necessary and proper, shall, with the advice and approval of the advisory council, make such additional rules and regulations as may be necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory, or the District of Columbia, from another State or Territory or the District of Columbia, and when said rules and regulations have been made and approved by the President of the United States, they shall be promulgated by the Commissioner of Public Health and enforced by the sanitary authorities of the State, Territories and municipalities, where the State, Territorial or municipal health authorities will undertake to execute and enforce them; but if the State, Territorial or municipal authorities shall fail or refuse to enforce said rules and regulations, the President of the United States shall empower the Commissioner of Public Health to execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose. The Commissioner of Public Health shall make such rules and regulations, with the advice and consent of the advisory council, and approved by the President of the United States, as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers and crew, which shall be published and communicated to, and enforced by, the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel, or owner, or officer thereof, until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul, or other consular officer of the United States, for ten days, in the port from which said vessel sails; and the certificate of such consul, or consular officer, over his official signature, shall be competent evidence of such posting in any court of the United States.

SEC. 12.—That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the

same, the Commissioner of Public Health may remand said vessel, at its own expense, to the nearest National or other quarantine station, where accommodations and appliances are provided for the necessary disinfection and treatment of the vessel, passengers and cargo; and after treatment of any infected vessel at a National quarantine station, and after certificate shall have been given by the United States quarantine officer at such said station that the vessel, cargo and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be admitted to entry to any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State, Territorial or local authorities, the Commissioner of Public Health may direct vessels bound for said ports, to undergo quarantine at such said State, Territorial or local station.

SEC. 13.—That whenever it shall be shown to the satisfaction of the President of the United States that by reason of the existence of cholera, yellow fever, or other infectious or contagious diseases in a foreign country, there is danger of the introduction of the same in the United States, and that notwithstanding the quarantine defense, this danger is so increased by the introduction of persons or property from such country that a suspension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places as he shall designate, and for such period of time as he may deem necessary.

SEC. 14.—That whenever the proper authorities of a State or Territory shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Commissioner of Public Health shall be authorized to receive them and to pay a reasonable compensation to the State or Territory for their use, if in his opinion they are necessary to the United States.

SEC. 15.—That whenever necessary there shall be purchased or erected, under the orders of the Commissioner of Public Health, with the approval of the Secretary of the Treasury, suitable warehouses with walls and enclosures, where merchandise may be unladen and deposited from any vessel which shall be subject to a quarantine or other restraint, pursuant to the health laws of any State, at such convenient places therein as the safety of the public revenue and the observance of such health laws may require.

SEC. 16. That whenever the cargo of a vessel is unladen at some other place than the port of entry or delivery under the foregoing provisions, all the articles of such cargo shall be deposited, at the risk of the parties concerned therein, in such public or other warehouses or enclosures, as the collector of customs shall designate, there to remain under the joint custody of such collector and of the owner or master, or other person having charge of such vessel, until the same are entirely unladen or discharged, and until the articles so deposited may be safely removed without contravening such health laws. And when such removal is allowed, the collector having charge of such articles may grant permits to the respective owners or consignees, their factors or agents, to receive all merchandise which has been entered, and the duties accruing upon which have been paid, upon the payment by them of a reasonable rate of storage, which shall be fixed by the Secretary of the Treasury for all public warehouses and enclosures.

SEC. 17.—That the master of any vessel employed in transporting passengers between the United States and Europe, is authorized to maintain good discipline, and such habits of cleanliness among the passengers as will tend to the preservation and promotion of health; and to that end he shall cause such regulations as he may adopt for this purpose to be posted up, before sailing, on board such vessel in a place accessible to such passengers, and shall keep the same so posted up during the voyage. Such master shall cause the apartments occupied by such passengers to be kept at all times in a clean, healthy state; and the owners of every such vessel so employed are required to construct the decks, and all parts of the apartments, so that they can be thoroughly cleansed; also to provide a safe, convenient privy or water-closet for the exclusive use of every one hundred passengers. The master shall also, when the weather is such that the passengers can not be mustered on deck with their bedding, and at such other times as he may deem necessary, cause the deck occupied by such passengers to be cleansed with chlorid of lime, or some other equally efficient disinfecting agent. And for each neglect or violation of any of the provisions of this section, the master and owner of any such vessel shall, upon conviction thereof, be severally liable to the United States in a penalty of one hundred dollars, to be recovered in any circuit or district court within the jurisdiction of which such vessel may arrive, or from which she is about to depart, or at any place where the owner or master may be found, or to imprisonment of not less than thirty days, or by both fine and imprisonment, in the discretion of the court.

SEC. 18.—That whenever the evidence shall appear conclusive to the President of the United States that cholera, yellow fever, typhus fever, typhoid fever, smallpox, diphtheria or other plague, exists in any State or Territory, or in the District of Columbia, to such an extent that there is great danger of the spread of such disease into other States, Territories, or the District of Columbia, by means of vessels and vehicles engaged in the transportation of goods, passengers, and the United States mail, by land and water, or by persons traveling, on foot or otherwise, he is hereby authorized to call together the Commissioner of Public Health and advisory council to take such action as may be necessary to prevent the spread of such disease from one State or Territory into another, or from any State or Territory into the District of Columbia, or from the District of Columbia into any State or Territory, and the Commissioner of Public Health shall make such rules and regulations, by and with the advice and consent of the advisory council, and the approval of the President of the United States, as may be necessary to meet the emergency, and all such rules and regulations shall have the force of law, and supersede all other rules, laws or regulations for the time being at the place designated, and any one violating any such rules and regulations shall, upon conviction thereof, be subject to arrest and imprisonment for a period of not less than thirty days. The Commissioner of Public Health may temporarily employ such inspectors and other persons as may be necessary to execute all rules and regulations adopted as aforesaid to stamp out and prevent the spread of such disease.

SEC. 19.—That the Commissioner of Public Health or any one appointed by him may, with the approval of the Secretary of the Treasury, select suitable localities for establishing stations on rivers and other lines of interstate commerce and travel by railroads, and may cause to be erected necessary temporary buildings for the disinfection of passengers, baggage, cargoes, vessels and vehicles, and may enforce such rules and regulations relating thereto as may have been, or may be, prescribed therefor.

SEC. 20.—That the Secretary of the Treasury is authorized whenever a conformity to such quarantines and health laws requires it, and in respect to vessels subject thereto, to prolong the terms limited for the entry of the same, and the report of the entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries. No part of the cargo of any vessel shall, however, in any case be taken out or unladen therefrom otherwise than is allowed by law, or according to the regulations and rules adopted and promulgated by the Commissioner of Public Health under the provisions of this act, or any existing act.

SEC. 21.—That the Commissioner of Public Health and the advisory council, created under this act, shall devise such means and methods as they may deem most effective to control and exterminate all domestic diseases transmitted by contact, such as phthisis pulmonalis or tuberculosis, diphtheria, scarlet fever, smallpox, leprosy and all diseases dangerous to the public health. That the said Department of Public Health may, under the direction of the Commissioner of Public Health, make investigations, both in the United States and, if necessary, in foreign countries, into the nature, origin and prevention of contagious, epidemic and other diseases, and the causes and conditions of particular outbreaks of disease in the United States, and in order that said experiments may be made, the Commissioner of Public Health shall, if necessary, enlarge the laboratories of the Marine Hospital Service, erect and maintain such other laboratories as may be necessary, and to equip said laboratories with the best appliances obtainable for investigation into the causes of disease and how to prevent and obliterate the same.

SEC. 22.—That the Commissioner of Public Health may engage the services of experts, not to exceed six in number, in such laboratories in the United States as are best adapted by location, equipment or special fitness, to aid the Department of Public Health in making investigations, the pay to be allowed such experts to be fixed by the Commissioner of Public Health. It shall also be the duty of the said department to investigate the best method for the disposal of sewage, the protection of public water supplies, to ascertain the best sanitary methods, to investigate all matters which relate to the public health, and to gather statistics relating to marriages, births, and deaths, and cause of death, and when the same can be done without prejudice to the public service, the President of the United States may detail officers from the several departments of the

government for temporary duty to act under the direction of said department, to carry out the provisions of this act, and all other acts of the Congress of the United States providing for a quarantine against disease and to prevent the spread of any disease within the United States.

SEC. 23.—That the Secretary of the Department of Agriculture, and the Commissioner of the Department of Labor shall respectively furnish for the use of the Department of Public Health such information as they shall from time to time gather upon the following and kindred subjects, to-wit: 1. The investigation of foods; also drugs, liquors and wines, their standard of purity and their adulterations. 2. The transmission of disease from animal to man and *vice versa*, such as tuberculosis, glanders, etc. 3. The statistics of climate with relation to infectious and other diseases. 4. The statistics and conditions relating to consanguineous and other marriages liable to produce physically and mentally defective offspring; and any information leading to race improvement through better marriage selection than obtains at present. 5. The statistics relating to child labor and to confined and unhealthy occupations, etc.

SEC. 24.—That it shall be lawful for the Commissioner of Public Health, when in his judgment it may seem necessary to confer upon any municipal or local health officer, or health authority, through the State or Territorial authorities in which he may have jurisdiction, power also to enforce the provisions of this act and any rules and regulations made in pursuance thereof, and any person who shall knowingly disobey or violate any order, rule or regulation made pursuant to the authority herein conferred, shall, upon conviction thereof, be deemed guilty of a misdemeanor punishable by a fine of not less than $500 or by imprisonment for a period of not less than one year.

SEC. 25.—That the Commissioner of Public Health shall make an annual report of the operations of the Department to Congress with such recommendations as he may deem important to the public interest; and said report, if ordered to be printed by Congress, shall be done under the direction of the Commissioner of Public Health, and that all mail matter of whatever class relative to the Department of Public Health and its duties, and addressed to the Commissioner of Public Health and indorsed "Official Business, Department of Public Health," or mailed by said department, shall be transported free of postage; and if any person shall make use of such indorsement to avoid the payment of postage in his private letter, package or other matter in the mail, the person so offending shall, upon conviction thereof, be deemed guilty of a misdemeanor and be subject to the penalty prescribed by the existing law.

SEC. 26.—That the Commissioner of Public Health is authorized to appoint for duty not to exceed six sanitary inspectors, at a salary not to exceed $1,800 per annum each, and their necessary actual traveling expenses; at least two of these inspectors shall be experts in quarantine matters, two shall be skilled bacteriologists, and one shall be an expert statistician. The Commissioner of Public Health is authorized to employ one chief clerk at a salary of $1,800; one clerk of class three at $1,400; and one clerk of class two at $1,400; and four clerks at $1,000 each, one messenger at $800, one stenographer at $800, one watchman at $600 per annum.

SEC. 27.—That any officer, or person acting as an officer, or agent at any quarantine station, or other person employed to aid in preventing the spread of disease, who shall wilfully violate any quarantine laws of the United States, any of the provisions of this act, or any of the rules and regulations made and promulgated as provided for in this act, or any other act of the Congress of the United States providing for and regulating quarantine against disease, or to aid and prevent the spread of any disease within the United States, or any lawful order of his superior officer, or officers, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not more than $500, or imprisonment for not more than one year or both, in the discretion of the court.

SEC 28.—That when any common carrier or officer, agent, or employe of any common carrier, shall wilfully violate any of the quarantine laws of the United States, or the rules and regulations made and promulgated as provided for in this act, or any other act of the Congress of the United States regulating and maintaining a quarantine against disease, and to prevent the spread of disease within the United States, such common carrier, officer, agent, or employe shall be deemed guilty of a misdemeanor, and shall upon conviction thereof be punished by a fine of not more than $500 or imprisonment for not more than two years, or both, in the discretion of the court.

SEC. 29.—That any person who shall wilfully violate any rule or regulation made and promulgated by authority of this act, or any other act of the Congress of the United States, providing for a quarantine against disease, and to prevent the spread of any disease within the United States, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not more than $500 or imprisonment for not more than two years, or both, in the discretion of the court.

SEC. 30.—All convictions for the violation of any of the provisions of this act, or any other act of the Congress of the United States, providing for a quarantine against disease, and to prevent the spread of any disease within the United States, shall be tried in the district wherein the offense was committed, and it shall be the duty of the United States district attorney for such district to appear on behalf of the United States, and all trials and proceedings shall be conducted in accordance with the rules and laws governing criminal cases triable in the United States courts.

SEC. 31.—That all rules made and promulgated, adopted and published pursuant to the provision of an act entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service," approved Feb. 15, 1893, shall remain in force until the same are annulled, changed, or modified, as provided for by this act, and other acts of Congress providing for quarantine against diseases, and the spread of any disease within the United States.

SEC. 32.—That all rules and regulations made and promulgated to enforce the provisions of this act, or any other act of the Congress of the United States, providing for a quarantine against disease, and to prevent the spread of any disease within the United States, shall be approved by the President of the United States, and when approved by him shall have all the force and effect of law.

SEC. 33.—That the Commission of Public Health shall annually submit to the Secretary of the Treasury, for transmission to Congress, estimates of the expense necessary to maintain properly the Department of Public Health for the ensuing year. That there shall be, and hereby is, appropriated out of the moneys in the Treasury and not otherwise appropriated, the sum of $75,000 for the purpose of this act. The sum of $1,000,000 already appropriated and known as an emergency fund to be expended by the President of the United States or the balance thereof not already expended, shall be a fund and held and expended at the discretion of the President of the United States in the execution of the provisions of this act.

SEC. 34.—Sec. 1, Chapter 19, Supplement to the Revised Statutes, Vol. 1, second edition, revised and continued (page 637) is hereby amended so as to read as follows:

Sec. 1. *Be it enacted, etc.*, That medical officers of the Marine Hospital Service of the United States shall hereafter be appointed by the President, by and with the advice and consent of the Senate, and no person shall be so appointed until after passing a satisfactory examination in the several branches of medicine, surgery and hygiene before a board of medical officers of said service. Said examination shall be conducted according to rules prepared by the Commissioner of Public Health and approved by the advisory council and the President.

SEC. 35.—Sec. 4,796 and 4,082, Revised Statutes of 1878, Chapter 66, laws of 1878, Supplement to Revised Statutes, Vol. 1, second edition, revised and continued: "An act to prevent the introduction of contagious or infectious diseases into the United States."

Paragraph 9, chapter 130, laws of 1875, same supplement: "An act making appropriations for sundry civil expenses of the Government for the fiscal year and for other purposes."

Sec. 7, chapter 156, laws of 1875, same supplement: "An act to promote economy and efficiency in the Marine Hospital Service."

Chapter 51, laws of 1890, same supplement: "An act to prevent the introduction of contagious diseases from one State to another, and for the punishment of certain offenses."

Paragraph 5, chapter 195, passed July 16, 1892.

Paragraph 3, chapter 211, passed March 3, 1893.

Paragraph 6, chapter 174, passed July 31, 1894.

Chapter 300: An act amendatory to the aforesaid, passed Aug. 18, 1894

Paragraph 9, chapter 177, passed March 2, 1895.

Chapter 114, Supplement of the Revised Statutes, Vol. 2, laws of 1893: 'An act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service," and all other acts, or parts of acts, inconsistent herewith, or repugnant to the provisions of this act, are hereby repealed.

SEC. 36.—This act shall take effect and be in force sixty days after its passage, within which time the Commissioner of Public Health and Assistant Commissioner of Public Health may be appointed.

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SATURDAY, OCTOBER 9, 1897.

ARE OUR BACTERIOLOGIC METHODS COMPLETE AND SCIENTIFIC?

The recognition of pathologic bacteria is now all important and in many disorders an essential part of medical diagnosis. There is no doubt as to the advantage in knowledge and accuracy that has been gained by the methods now employed, and medical bacteriologists at least have generally come to consider them as fully meeting all scientific demands. It is true that questions of identity of bacterial species often arise, and that uncertainty exists in regard to some practically important points, but there are apparently few who are inclined to doubt the prevalent methods of research as being fully sufficient for their ultimate solution. Any charge that the commonly accepted procedures in the study of these organisms are not in accordance with the approved methods of scientific investigation and liable to give imperfect of not actually misleading notions as to their real character and behavior under some very possible circumstances would probably be a surprise to many bacteriologists and would be received with doubt if not with absolute discredit.

This, however, is just the accusation brought against the prevailing method of bacteriologic study by no less eminent an authority than Professor H. MARSHALL WARD in his opening address as president of the Botanical Section of the British Association for the Advancement of Science at its late Toronto meeting. He showed how the earlier bacteriologists, COHN, DE BARY and BREFELD, followed a different plan from that now in vogue, and one more in accordance with approved scientific ideas; they sought to study individuals of the species, to isolate single spores under the microscope, and to trace continuously their growth through the fully developed form to the production again of spores; in short, to study the life history of the individual bacterium, which is the only true method in natural history. This was a difficult task and many mistakes were made by the earlier workers in the field, and had investigators been confined to this method alone it is not probable that bacteriologic diagnosis would even now be as important and efficient as it has been for a number of years past. Undoubtedly the introduction of the colony method of culture on gelatin and other substances, by KOCH in 1881, was in its way a great stimulus to investigation and is responsible for the great extension and advance made since then in the practical utilization of its results. The earlier investigators, though on the right track, with their more imperfect appliances, fell into many errors, and the rapid method of making wholesale cultures was very naturally heralded as a great step in advance and, as it has been called, "the Columbus egg of bacteriology." Nevertheless, as Professor WARD says, "it turned the current of investigation of bacteria from the solid and trustworthy ground established by COHN, BREFELD and DE BARY, into an entirely new channel and one that really abandons the proper method of morphologic study, to satisfy itself with what is in comparison a superficial and untrustworthy one. While the more difficult method of studying the individual bacterium from spore to spore is subject to error from defects of technic and observation, it is nevertheless an ultimately practicable one, and the only one by which disputed points can be finally and satisfactorily solved. The importance of this can be shown by the testimony of KOCH himself as quoted by EISENBERG in the preface to his "Bacteriological Diagnosis." He says: "The further bacteriologic investigation advances, the more obvious becomes the fact that it is absolutely unallowable to base our diagnosis of a given bacterium upon anything short of a careful consideration of all its characters and properties," and these are not to be ascertained beyond question by studying bacteria only *en masse* and neglecting their possible individual peculiarities. These are, in fact, implied in their behavior and modes of growth in the aggregated colonies, which must depend upon structural peculiarities of the individual members. The present prevalent method is, as WARD points out, only comparable to a botanist satisfying himself with observation of oaks, for example, as seen in masses in a forest, or grass and clover as they appear in a general view of a meadow, or, to approach nearer to the actual condition, to classifying molds by the appearance of the patches. There is no parallel to this in natural history, unless we admit as such the species of corals and sponges, but here the special individual

organisms are not neglected by the naturalist and wide distinctions are made between apparently similar forms. Species are not made, as in bacteria, exclusively on their behavior in aggregated masses, observed only as such, or if so, are not considered final and absolute determinations indicating an exhaustive knowledge of their peculiarities and life history, as appears to be the case in medical bacteriology. The quotation from KOCH, which has been given above, which while literally accepted would seem to cover all the scientific demands, appears to have originally referred only to the imperfect method here deprecated; the observation of the form, color, marking and physiologic behavior of the colonies themselves and in different culture media, the popular and prevalent procedure, and the one almost, if not quite, exclusively taught in our medical text-books.

Professor WARD does not unduly disparage the results of the work of what he calls the test-tube school of bacteriologists; he admits that they have done a large amount of what may be considered valuable preliminary work, but he objects to and would discourage species-making merely on the data thus obtained. That his criticisms are just will probably be admitted, but it may be claimed that the present methods are amply sufficient for all medical needs and that without them the progress that has been made would have been impossible. The last of these propositions may be accepted as true without admitting the correctness of the other; imperfect knowledge may be better than none, but it can not be claimed to be all that is desirable. There is no need to say that our acquaintance with certain pathogenic bacteria is altogether insufficient, and any plan that will add to our knowledge of them ought to be welcomed. Even if it should be necessary to revise much of what has been written on medical bacteriology to meet all scientific demands the results ought to be worth the trouble they have cost. At present it is not satisfactory to be told that the deficiencies that exist in our knowledge in regard to many important points may be due to the inconsiderate acceptance of imperfect and insufficient methods of investigation.

However Professor WARD'S address is received it should be a stimulus to more exact and thorough studies in medical bacteriology. In these minute but important investigations exact methods are as necessary as in any others, and while we may have to depend largely, as heretofore, upon the study of colony cultures, they need not be considered as the *ne plus ultra* of research of this particular branch of medical science.

THE ROLE OF GRANULATION TISSUE IN WOUND INFECTION WITH PATHOGENIC BACTERIA.

NICOLAUS AFANASSIEFF[1] of Moscow undertook to study the reactive changes that occur in granulation tissue when pathogenic bacteria are introduced into it. Some of the results obtained seem of more than ordinary interest and importance because they touch one of the most interesting questions in biology, namely, the nature of the struggle, if one may use the expression, of the organism against infection.

While very many investigators have studied the ability of granulation tissue to absorb alkaloids, various other chemic substances, and infusions of decomposing materials, none of the previous researches have taken up the question, under what conditions does infection with pathogenic bacteria of the whole organism take place through granulation tissue. AFANASSIEFF made it his object to study the consequences of experimental infection of granulation tissue with various pathogenic microbes. After trying several methods it was found, by excising a small piece of skin with the subcutaneous tissue, and then pouring on a thick layer of collodion, that on removing the layer of collodion on the third or fourth day, there would be a nicely granulating surface; this method was found very serviceable in the case of such animals as mice, rabbits, chickens and pigeons. In the case of dogs and sheep a small wound was made and through this a sterile glass rod, about one and one-half inches long, was forced into the subcutaneous tissue. The wound was then sutured, covered with collodion, and after four days the sutures would be removed and the glass rod carefully extracted so as not to injure the granulations and cause hemorrhage. Under all circumstances great care was always taken not to experiment upon bleeding surfaces, lest the microbes should be introduced directly into the circulation. The microbes experimented with were principally anthrax bacilli and the vibrio Metchnikoff. The virulence of the cultures was carefully determined beforehand and only typical and highly virulent cultures were used. A small quantity was then placed on the granulating surface and simultaneously an equal amount of the same culture was placed on a fresh wound on the same place of the control animal as the granulating wound on the original animal. Subsequently the juice of the granulation tissue and the granulation tissue itself were examined microscopically and bacteriologically. The virulence of the cultures obtained from the granulation tissue was carefully determined and cultures were made from the internal organs of the animals that perished.

Without introducing the protocols and statistics of the experiments, it may be allowed to say that they show that animals infected with pathogenic microbes placed on an uninjured granulating wound, do not succumb; that a general infection of the organism does not take place; the bacteria placed on the granulations do not, if these are healthy, reach the internal organs. Furthermore, that such animals become almost wholly immune to subsequent infection with

[1] Ziegler's Beiträge, Bd. xxii, Heft 1, 1897.

fully virulent cultures introduced through fresh wounds. Inasmuch as bacteria did not enter the organism when placed on granulating wounds, it must be concluded that the absorption of some products of the reaction between the bacteria and the granulation tissue produced the more or less well marked immunity. .

The examination of the infected granulation tissue by means of cover-glass preparations of the juice, as well as the suitably prepared sections of the tissue itself, shows in brief that the bacteria undergo a progressive destruction in the form of various degenerations and disintegrations. This process of destruction was observed to begin so early that but little, often no, signs of phagocytosis were evident; but as the bacterial disintegation became more marked phagocytosis became more and more pronounced. The earliest evidences of degeneration of the bacteria consists in irregular or poor staining in ordinary solutions; in the anthrax bacilli fine granules would also appear; more rarely the bacteria would swell up into worm-like, irregularly and poorly stained, often thin threads.

Another form of degeneration of the bacteria was observed in a failure to stain with basic dyes and, on the other hand, affinity for acid coloring matters, such as eosin; this degeneration was noted in the free as well as the intracellular bacteria, and a few times as early as fifteen minutes after the placing of the bacteria on the granulation. BORDET, METCHNIKOFF and others have described such *eosinophile* bacteria in the interior of cells and have interpreted the change in the affinity for stains as evidences of phagocytosis. Furthermore, AFANASSIEFF also observed granular, bacterial detritus, staining red with eosin, in the interior of the leucocytes. Similar changes also occurred when bacteria were placed on fresh wound surfaces, but much later and in less pronounced degree. It was noted that when bacteria such as mentioned were placed on the wounds a free exudation of serum took place, lasting a few hours. These observations go to show that in granulation tissue bacteria may begin to disintegrate under the influence of the tissue juice without any participation of the phagocytic leucocytes. AFANASSIEFF interprets this as meaning that the phagocytosis plays either no part or merely a secondary one in the struggle of the organism against infection; it would seem that this might be true as regards actual phagocytosis in this case, but it must not be forgotten that the extracellular, bactericidal action of the serum may, in the last instance, depend upon substances produced or liberated by leucocytes and other cells.

In conclusion it may be allowed to mention the more important conclusions to be drawn from AFANASSIEFF's research:

1. General infection of the organism with pathogenic bacteria does not take place through healthy, uninjured young granulation tissue.

2. Animals experimented on by placing pathogenic bacteria on granulating wounds become less susceptible than normally to a subsequent infection with fully virulent cultures through fresh wounds.

3. Pure cultures made from infected granulation tissue ten to twelve hours after infection, were found to be more or less attenuated.

4. Pathogenic bacteria placed on granulating wounds undergo a progressive disintegration under the action of the tissue juice, the processes of phagocytes playing a secondary role.

Finally, it should be mentioned that these observations are of direct practical interest because they indicate that healthy granulation tissue forms a protective wall against general infection; consequently, the surgeon should treat granulating surfaces with great tenderness and care, so as not to produce injuries to the young tissue through which infection would be more liable to occur.

ON THE OCCURRENCE OF THE FAT-SPLITTING FERMENTS IN PERITONEAL FAT NECROSES AND THE HISTOLOGY OF THESE LESIONS.

The interesting subject of fat necrosis in its relation to certain diseases of the pancreas has been commented upon in these editorial columns before. The coincidence of disease of the pancreas with fat necrosis in the peritoneum and elsewhere has lent support to the view that a definite relation of cause and effect must obtain between the gland and the changes in the fat. LANGERHANS[1] was the first to furnish experimental proof of this assumption. He injected sterile pulp of fresh pancreas into the perirenal tissue of a rabbit, with the result of causing inflammatory changes and some necrosis of the fat. Subsequent experiments by DETMER, HILDEBRAND, KÖRTE and WILLIAMS[2] have established: 1, that the secretion of the pancreas may enter the peritoneal cavity without setting up diffuse inflammation; 2, that in certain instances free, sterile pancreas or the pancreatic secretion causes focal fat necrosis; and 3, the element of infection plays an insignificant, if not unessential, part.

In order to reach more exact notions of this pathogenic action of the pancreatic secretion, FLEXNER[3] attempted to demonstrate the presence of the fat-splitting ferment in areas of necrosis and its absence from normal human fat. Without going into details as to chemic methods employed for demonstrating this ferment, it will suffice to state that positive reactions were obtained in a human case of widely disseminated necroses and in areas of fat necrosis pro-

[1] "Experimenteller Beitrag zur Fettgewebsnekrose," Virchow's Festschrift, 1891.
[2] All quoted by Flexner, "Trans. American Assoc. of Phys.," 1897.
[3] Loc. cit.

duced by ligating the veins and lacerating the pancreas in cats and dogs when the animals were killed no longer than three to four days after the operation. By excising necrotic foci on the third day or so it could be shown that the fat-splitting ferment which was then present would gradually disappear. Microscopic examination showed a marked difference between the early and the late lesions, the former, which contain the ferment, being acute, the others presenting pronounced evidences of cicatrization. Hence FLEXNER concludes that although it can not be affirmed that steapsin is the direct cause of the necrosis, yet such an assumption is rendered highly probable by its constant occurrence in the diseased areas, its absence from healthy fat and the nature of the pathologic changes. The escape of the pancreatic secretion into the peri- and para-pancreatic tissues must be regarded as the cause of the fat necroses, and this escape is made possible by lesions of the pancreas itself, and also by disturbances of its circulation.

That necrosis of fat cells may occur from other causes is not excluded by these demonstrations. The cause of the necrosis found in the marrow of bones by PORFICK,[4] and in the subcutaneous and pericardial fat by CHIARI,[5] would be difficult to determine. Perhaps micro-organisms may play some part in these instances.

As regards the histologic changes, the main facts to be gleaned from the observations of PORFICK, FITZ. CHIARI, LANGERHANS and others are the following: The process begins with a decomposition of the neutral fat contained within the fat cells; the fluids are eliminated, the fatty acids remain behind as crystals which, after a time, unite with calcium to form insoluble lime salts; in the meantime the nuclei of the affected cells lose their affinity for stains, and soon the lime compounds form granules, rings and hyaline masses. Around such foci reactive inflammatory changes soon occur. Late proliferation of the fixed cells begin, the necrotic material gradually shrinks and finally it becomes completely replaced with connective tissue. When such changes occur around areas located in the connective tissue septa or parenchyma of the pancreas, small districts characteristic of interstitial pancreatitis result. Around the areas of necrosis produced experimentally, FLEXNER observed the occurrence of giant cells during the process of absorption.

From this brief review of some of the points in connection with fat necrosis, it would seem that our knowledge of its genesis is becoming more and more complete and satisfactory.

Let us have a Department of Public Health!

[4] Virchow's Archiv, lvi, 1872, p. 541.
[5] Prager Med. Wochenschrift, viii, 1883.

THE PUBLIC HEALTH BILL.

We print in this week's issue the Bill to establish a Department of Public Health, recommended by the Committee of our ASSOCIATION at Philadelphia. It has undergone, as will be noticed, very careful revision and it is believed it now meets the views of nearly all the members. The passage of the Bill may inconvenience some "coburghers" in official positions, but such considerations should not stand one moment in the way of the Bill, which is demanded by every consideration of humanity, by the voice of the united profession and by the dictates of common sense. The present calamitous epidemic is in itself an eloquent and terrible warning against the continuance of the present conditions. The Government quarantine was moved from Chandleur to Ship Island in spite of the lessons of the past, in spite of the law, in spite of the protest of the local health officer, and it is due to State Health Officer HARALSON of Mississippi, to say that during the past year he repeatedly protested against the reoccupancy of Ship Island quarantine. But this is a minor matter, notwithstanding the lives that have been lost in consequence of the sad blunder. The real need is for a Department of Public Health; at its head a commissioner who will not rule the Department by fear or favor; who will neither farm out the best positions in the service to personal favorites and sycophants, nor spend thousands of public money uselessly, and who will carry out the law with regard to conscience, right and the wishes of the people. At the proper time the Committee of the ASSOCIATION will urge the passage of this Bill, and at the suggestion of the Chairman of the Committee, Dr. WINGATE, we have had the bill electrotyped, so that any member desiring to write to his member of Congress or Senator in regard to it can have a copy sent to him by return mail. This is the way to secure the passage of the Bill, and now is the proper time when the whole country has been startled by the incompetence of the existing management.

Let us have a Department of Public Health!

THE "RECOGNITION" OF MEDICAL COLLEGES.

We observe in the columns of our esteemed contemporaries, the lay press, that frequent applications are made to the Board of Examiners, State Boards of Health, etc., for recognition by certain alleged medical colleges, some that are engaged either in selling diplomas outright or in giving them away after more or less protracted periods of study; usually less We have had three letters within a week inquiring whether the "Independent" Medical College of Chicago was "recognized" or not. We have similar inquires concerning other alleged medical colleges. In our humble judgment the test of a medical college is its curriculum and its equipment for teaching stu-

dents. Colleges that are unprovided with the modern facilities for teaching students should not be recognized by any board, and a requirement to that effect might well be the first test. The efficiency of the medical school is in proportion to the completeness or otherwise of its teaching outfit.

A school which is not fully equipped should be suppressed. So far as this "Independent" Medical College is concerned we do not believe it has any existence except on paper. Its graduates are to be considered as practicing medicine and obtaining money from their patients under false pretentions. This is, as we understand it, one of the concerns that offer to teach students at their own homes and prepare written questions and answers so that the student may not be put to the trouble of visiting the "college," but may have his degree conferred *in absentia*. The time has come when medical men should speak out in regard to certain half-baked institutions which flaunt their signs in the air like those announcing an approaching circus.[1] The mere desire of some half-educated person to be a "professor" should not of itself constitute any reason for recognizing a paper college, and that there are numerous medical colleges that are not demanded by the community or the necessities of the times is self-evident, and the profession itself should neither encourage students in going to these cheap John establishments nor give countenance to the persons engaged in keeping them up. So far as the "Independent Medical College" is concerned, we have never heard that they ever passed through the formality of giving lectures, and indeed it is quite probable that the kind of medicine taught by this particular diploma mill may come as well by mere contact with the sheepskin as by personal instruction of a venal "professor."

Let us hope that the State Boards of Examiners and licensing bodies everywhere may stimulate and encourage good schools by strong and vigorous rulings concerning teaching methods and appliances.

CORRESPONDENCE.

Drs. Rochester and J. R. Lemen on Paquin's Serum.

ST. LOUIS, Sept. 29, 1897.

To the Editor:—Dr. Rochester's letter (JOURNAL AMERICAN MEDICAL ASSOCIATION of September 18) in reply to my explanation of his unfair criticism of my work (JOURNAL, August 31) is self condemning. It does not demonstrate that he was justified, and that his efforts to find the truth about sero-therapy in tuberculosis were unbiased. It emphasizes the spirit of reckless indulgence which was manifest in his criticisms of a remedy, which, although not claimed by me to be perfect, is just what I have represented it to be, and was endorsed by many superior physicians. And it again shows a disposition to ruin rather than help those who sacrifice their existence in work to advance the sciences of medicine. I was humiliated to have to publish letters to explain my position, but I was justified; Dr. Rochester left no other recourse.

As to Dr. Joe Lemen of St. Louis, his good results with serum (Paquin) in tuberculosis are on record, and the records were written by himself and sent to me. The case of acute tuberculosis (the purest type of the disease) that recovered under this treatment, three years ago, under his care, is still living and well, and may be seen by the doctors who will go to the trouble to get at the facts. This is evidence that he wrote the truth then.

As to any special damage produced by antitubercle serum, such a thing does not occur in the hands of the careful physician. The usual untoward effects of sero therapy in general, occasionally noted after injections of the best diphtheria antitoxins of Germany, France and other countries, have rarely occurred with antitubercle serums. Deaths have occurred from the use of the most vaunted foreign antidiphtheric serums, but never with antitubercle serum (Paquin). We are frank enough in our literature and directions *to explain all the untoward effects known*. Such precautions are not generally taken by other antitoxin-producers. Thus advised, a conscientious physician will act properly and safely. Such serious accidents as are charged to some diphtheria serums, have never been reported as resulting from the use of any of the serums (for tuberculosis, tetanus, diphtheria, erysipelas, septicemia, puerperal fever, etc.) of the Paul Paquin Laboratories.

Dr. Lemen's comparison between the effects of antitubercle serum and Koch's old tuberculin amazes me. I thought Dr. Lemen knew that one is antitoxin, the product of immunized blood, and the other a toxin, the product of germ life in culture. These two agents are antipodes. They have opposite effects. No amount of unjust criticisms and unjust repudiation on the part of Dr. Lemen or any one else, no matter how good a physician, can outweigh the reports made by the scientific investigators of character who have made favorable reports. Such men can not be influenced by personal motives, or led by unscrupulous taskmasters. In self defence, the ground of the Doctor's attack might be given, did I not feel it indelicate and too ungenerous. This must be held as a *dernier ressort* should it become absolutely necessary to repel any more of the unkind criticisms and fallacies. I court fair criticisms of a scientific nature and gladly discuss them. They conduce to the advance of science. But mere denials or statements, or repudiations, without scientific backing, and without clinical records, particularly when inspired by unworthy motives, force upon me very painful duties. I can only meet them in part and can scarcely do justice to myself, without touching on personalities and giving offence. The consolation I have is the feeling that, as a rule, the readers realize quickly and appreciate the animus of an unfair critic. PAUL PAQUIN, M.D.

An Aseptic Hospital for Yellow Fever.

CHICAGO, Oct. 4, 1897.

To the Editor:—During the epidemic of yellow fever in 1878, I suggested the plan of what might be called an aseptic hospital. The suggestion brought forth no fruit. It seems to me that the present is an opportune time to repeat my proposition. It is based on the assumption that the germ of the disease pervades the atmosphere and that, as a necessity, the patient is continually inspiring new quanta of the noxious toxin.

The suggestion is to prepare a building for hospital purposes so that it shall be air-tight. Air enters it and leaves it through channels comparable to the ordinary furnace and ventilating pipes. This air has been heated to a degree judged to be sufficient to destroy the yellow fever germ and subsequently cooled to a proper temperature. It is forced into the building by an air blast, and it is withdrawn from it by the suction force of a pump. In this way all parts of the sanitarium are supplied

[1] When we wrote this line we were not thinking of a nocturnal institution that has stretched a canvas sign across one of the principal streets of Chicago!

by air freed from germs of the disease. The exhaust air from the building is also on its way outward purified by heat.

In the halls through which the building is entered an extra pressure of air is maintained, so that a strong blast from within prevents the entrance of the circumambient air when the doors are momentarily opened. It would be necessary, of course, in extemporizing such a sanitarium, that plants already erected and offering facilities for the contemplated arrangements should be pressed into service. Thus, gas works would be available for supplying heated air; and a manufactory of ice, or a cold storage warehouse, could be utilized for refrigerating it.

JOHN BARTLETT, M.D.

Philadelphia County Medical Society.

PHILADELPHIA, Sept. 25, 1897.

To the Editor:—Will you kindly announce on behalf of the Philadelphia County Medical Society that I have a considerable number of volumes of Transactions of the Medical Society of the State of Pennsylvania from 1889 to 1894, and some earlier ones in not perfect condition, which I shall be glad to furnish any one who will apply in person, or forward to any one who will accompany his application with the cost of packing and transportation, about 25 cents by mail.

Respectfully, AUGUSTUS A. ESHNER, M.D.
Chairman Publication Committee.

224 S. Sixteenth St.

A Department of Public Health.

AMITE CITY, LA., Oct. 3, 1897.

To the Editor:—The urgent need for a Department of Public Health comes prominently to the front in this section of the country.

Arbitrary and irrational quarantine methods are the rule, frequently enforced by the persuasive shotgun, travel and traffic are interfered with, the mails are delayed or stopped altogether, running of trains upon trunk lines hampered, and every inconvenience imposed that the ingenuity of frightened people can devise.

Quarantine and safety would both be made sure, the needs of commerce and the general public alike protected, and the losses minimized, if all interests centered in a Department of Public Health, instead of allowing each community to regulate such matters for itself.

From a shut-in center, with all kinds of quarantine on all sides, I certainly echo your sentiments, let us have a Department of Public Health. Yours truly,

C. S. STEWART, M.D.

SOCIETY NEWS.

Detroit Medical and Library Association.—At the regular meeting of the Detroit Medical and Library Association September 13, Dr. Andrew P. Biddle read an interesting paper on "Some Common Types of Germ Dermatoses," in which he took up some of the common skin diseases that owed their existence to micro organisms and in which the bacteriologists made the diagnosis and the clinicians with their practical therapeutics proved the correctness of the etiologic factor. The author dwelt upon the subdivision of the schizomycetes, naming as the factors in the causation of some of the diseases, the micrococci and the bacilli, especially the former, the streptococcus pyogenes and staphylococcus pyogenes aureus, and also taking the stand that we suspect a microbic origin in eczema, psoriasis, pemphigus, etc. The requirement of a suitable soil for the developing of micro organisms was first mentioned and then the clinical difference in different cutaneous diseases which are produced by their surroundings and accidental causes was touched upon, and the boil and carbuncle were cited. These, it was stated, were due to the presence of the staphylococcus pyogenes aureus; that both have an active local inflammation of more or less intensity, resulting in the formation of a core, and that they both produce a systemic disturbance due to the auto-intoxication. It was also stated that the difference was caused by the different situations of the two lesions; that the carbuncle invaded tissue that was less elastic, that the exit of the pus was more difficult and that the fertile soil of patients suffering from diabetic and other trouble in which carbuncle was often found, made it more easy for the propagation of the micro-organism. He showed that micro organisms were to be found around the invaded area of boils, and illustrated the same by citing a case in which, after the partial disappearance of a boil a second one appeared. The first one being one of considerable annoyance, both local and constitutional, to the patient; the doctor excised the second with the result that the local and constitutional trouble was cut short. The Doctor gave the history of some cases that came under his care in the Children's Free Hospital, in which on the parts subject to exposure to infection, as the hands, the face and the buttocks, there was found a condition of pustulo-crustaceous eruption, to which the Doctor was unable to give a categoric name. There was a number of pustules about the size of a split pea of irregular shape, raised above the surface and with a tense epidermic wall sometimes covered with a yellow, brown or blackish crust undermined by a purulent discharge, with a history of scratching, and upon examination pediculosis, scabies, and the other parasitic causes were eliminated. The Doctor came to the conclusion that this disease was due to infection with pus-producing cocci, usually staphylococcus pyogenes aureus or albus, and classed these cases with those suffering from pyodermia. Another class of diseases cited was among those admitted to the Children's Free Hospital, in which the skin lesion was so extensive as to make one believe that the trouble was some loathsome constitutional disease. The parts affected were the region of the genitalia and in the neighborhood of the uncombed hair, which is a mass of pustulo-crustaceous eruption. The skin is reddened, excoriated and infiltrated, which causes intense suffering to the little ones. Removal of the crust with soap and hot water and the application of antiseptic washes, destroyed the pus germs and at once brought about a change for the better. Another trouble is furnished by men who have been to some barber shop (probably the cleanliest) and who come, fearing they are suffering from barber's itch. Barber's itch or tinea sycosis is caused by the tricophyton. There is another variety of sycosis however, which somewhat resembles barber's itch, which is due to the invasion of pilo-sebaceous crypts with pus cocci. This variety does not present fully the picture of the tinea sycosis, though if it is neglected the hair follicles become sooner or later involved, especially in the region of the upper lip. The lesions are as a rule few in number and usually circular or oval in outline. There is some tumefaction and exudation covered with a very tenacious, brownish-yellow crust, beneath which is a purulent discharge. That pus organisms are present is proven by the fact that an antiseptic ointment applied after carefully removing the crusts, rapidly cures the disease. Very often this disease assumes the nature of a boil. The Doctor then enumerated some cases met with in his own practice, illustrating the different types of this disease, concluding with the advice that all cases should have careful attention in treatment after the recognition of their true nature with perseverance in the application of cleanliness, antisepticism and slight astringency.

PUBLIC HEALTH.

The Bubonic Plague, according to a dispatch of September 22, is again on the increase in Bombay Presidency, several Europeans having been attacked.

Yellow Fever.—We closed our record last week with the dispatches of September 27. Since then the state of affairs has been as follows: September 28, 17 new cases were reported at New Orleans with 2 deaths, 13 new cases at Biloxi with 1 death, 1 new case at Ocean Springs, 5 new cases at Scranton, 1 death at Edwards, 4 suspicious cases at Clinton, 10 new cases at Mobile and 1 death at Mifflin, Ind. The New Orleans School Board announced an indefinite postponement of the opening of the schools. September 29, 25 new cases were reported at New Orleans with 4 deaths, 4 new cases at Mobile with 1 death, 24 new cases at Edwards, 2 new cases at Brownsville. September 30, 24 new cases was the record for New Orleans, 29 new cases and 1 death at Edwards, 1 case at Algiers, 6 new cases and 1 death at Mobile, 3 new cases at Clinton, 2 new cases at McHenry, Miss., and 1 death at Biloxi. October 1, the deaths at New Orleans were 2 with 30 new cases, Mobile 7 new cases and 1 death, Edwards 19 new cases with 1 death, Biloxi 28 new cases, and McHenry 2 new cases. The Southern Pacific announced the closing of its gulf route to all freight traffic. October 2 there were 4 more deaths at New Orleans and 23 new cases, Mobile 1 new case and 1 death, St. Elmo, Ala., 1 case, Scranton 5 new and 3 suspicious cases. October 3 there were at New Orleans 2 deaths and 31 new cases, Algiers 3 new cases, Edwards 2 deaths and 14 new cases, Nittayuma 4 cases, Mobile 4 new cases with no deaths, Biloxi 2 deaths and 4 new cases. October 4 reports give 24 new cases at New Orleans, making the total to date at New Orleans, 341 cases with 36 deaths, 103 recoveries and 202 still under treatment. At Edwards 18 new cases make the total number there 335 with 12 deaths. At Mobile 7 new cases and 1 death were recorded and 3 new cases at McHenry. The weight of responsibility of those whose neglect caused the present calamity is thus seen to be increasing from day to day and will continue until frost. As we go to press, dispatches of the 5th announce 3 more deaths at New Orleans, with 31 new cases. This makes the total number of deaths in that city 39, and the total number of cases 372. They also announce at Mobile 2 deaths and 2 new cases, making a total of 15 deaths and 95 cases.

Adulteration of Food and Drugs.—The following Circular No. 2 is sent out by the United States Department of Agriculture, Division of Chemistry:

WASHINGTON, D. C., Sept. 17, 1897.

DEAR SIR:—Under authority of Congress, the Department of Agriculture is investigating the extent and character of food and drug adulterations, and is desirous of securing all the information possible on the subject. Having been appointed special agent to inquire into and report upon this matter, the undersigned writes to request that you kindly furnish the Department (under the inclosed franks) all the information you have in regard to adulterations, together with any suggestions as to the best remedy for the evil.

1. Do you know of any new adulterant? If yes, state what, and how used.
2. Would a national food and drug law assist in preventing adulteration?
3. Would uniform food, drug and pharmaceutic laws tend to promote efficiency and purity?
4. Please suggest what would best promote the interests of consumers and legitimate manufacturers and dealers.
5. What is your opinion as to the extent of damage done legitimate business by imitation of brands, packages, etc.?
6. To what extent do sophistication, misbranding and injurious adulteration exist?
7. Have State laws aided in preventing adulteration? To what extent?
8. Would a national law assist State officials in properly executing local laws?
9. Have adulteration, sophistication and misbranding increased or decreased?

Prompt replies to the above, together with any other information or suggestions, will be highly appreciated.

Yours respectfully, A. J. WEDDERBURN,
Special Agent.

Approved:
JAMES WILSON, Secretary.

NECROLOGY.

JAMES T. SOTHORON, M.D., Washington, D. C., September 27. Dr. Sothoron was born near Charlotte Hall, Md., July 9, 1842. His ancestors came over from England with Lord Baltimore and were among the first substantial settlers in Maryland. In 1858 he entered the academic department of Georgetown University, where he remained as a student until the beginning of the Civil War. In 1862 he became a tutor. He matriculated in 1863 in the Medical Department of Geogetown University, and continued his studies in medicine. While a student he was appointed medical cadet of the United States army, served as such in Campbell Hospital, in the District, and was graduated in 1865. He was one of the original organizers of the Episcopal Church Orphange of Washington and one of the trustees. He was also one of the petitioners for the organization of Garfield Hospital, was a member of the Washington Microscopical Society and a member of the third Congress of American Physicians and Surgeons. He was also connected with the District Medical Society, Medical Association of the District and the AMERICAN MEDICAL ASSOCIATION, and was a member and delegate of the Central Board of Managers of the Associated Charities of the District and also a delegate and member of the ninth International Medical Congress.

WILBUR H. BOOTH, M.D., Yale, 1874, of Utica, N. Y., at the Murray Hill Hotel, New York City, September 25, aged 45 years. He was on a pleasure trip with his wife when taken seriously ill.

CHARLES THOMAS RYAN, M.D., Bellevue, New York City, 1869, October 1. He never practiced medicine, having become proprietor of a well-known bath establishment in New York, where he died of chronic nephritis.

ALEXANDER R. DAY, M.D., St. Paul, Minn., September 24, aged 29 years.——John E. Jenkins, M.D., Charleston, Ill., September 25.——A. S. Lovelace, M.D., San Francisco, September 23, aged 42 years.——James B. McCullough, M.D., Steubenville, Ohio, September 24, aged 65 years.——Alexander Mullen, M.D., St. Louis, September 22, aged 80 years.——James G. Nolan, M.D., Toledo, Ohio, September 23, aged 71, professor of nervous and mental diseases, Toledo Med. Col. ——Alonzo J. Phelps, M.D., Nittayuma, Miss., September 28.——Louis N. Pittwood, M.D,, Watseka, Ill., September 29, aged 67 years.——Robert G. Rankin, M.D., Baltimore, September 26, aged 71 years.——William Rickert, M.D., September 22, aged 42 years.——G. R. Ricketts, M.D., Proctorville, Ohio, September 20, aged 40 years.——F. L. Thompson, M.D., Cleveland, September 21, aged 55.——Dr. Joseph Brasseur, managing editor of the *Gazette Médicale de Liége*, former president of Liége Medical Federation and Liége Medical Circle and honorary president of the Chambre Syndicate de l'Ouest, September 18, aged 57 years.——Samuel J. Craig, M.D., College Physicians and Surgeons, New York, 1895, at his father's home in Brooklyn, N. Y., September 29, aged 25 years.

BOOK NOTICES.

Report of the Board of Health of the State of Alabama for the year 1895. Paper, 214 pages. Montgomery: Roemer Printing Co., 1896.

This report comes out a year late owing to various delays, and is arranged under the following main divisions: "Proceedings and Recommendations," "Reports of the County Boards," "Statistic Reports." The latter division is replete with tables of facts relating to the vital statistics of the State.

Annual Report of the City Physician for the Hospital and Board of Health Department of Kansas City, Mo., for the fiscal year ending April 19, 1897. Paper, 68 pages. Kansas City, 1897.

This volume contains reports of the Board of Health, City Physician, City Hospital, Dispensary, Garbage and Sanitary

Division, Milk and Food Inspector, Weather Review for 1896 and Mortality Tables of the city.

Proceedings of the Connecticut Medical Society, 1897. Cloth, 385 pages. Published by the Society. 1897.

This is a complete report of the one hundred and fifth annual convention, held at Hartford, May 26 and 27, 1897. The papers on general medicine and obstetrics include papers relating to infantile diarrhea, tuberculosis, diphtheria, theories of immunity, "The Value of Correct Sitting as an Exercise for Invalids," and papers on Obstetric cases. The surgical papers are: "Essay on the Progress of Surgery," "The Treatment of Pus Cases in Operating for Appendicitis," "Laparotomy at the Hartford Hospital," "Report of Five Cases of Uterine Retrodisplacement Treated by Vaginal Fixation."

MISCELLANY.

Subjects announced for discussion at the fourth French Congress of Internal Medicine, to be held at Montpellier, April 12, 1898, are: 1. Clinical forms of pulmonary tuberculosis. 2. Associated bacterial and mixed infection. 3. Therapeutic application of organs with internal secretion.

The report of the Moscow Congress published in the JOURNAL was selected and translated from the excellent report which appeared simultaneously and identical at first in all the leading foreign exchanges, furnished by the International Scientific and German Medical Press Associations.

Physicians in the Italian Legislature.—The *Gazzetta degli Osp. e delle Clin.* publishes the list of physicians who are members of the legislature, twenty-three in number, including three alienists of note and six professors, among them Professors Bacelli and Celli of Rome, Professor Bianchi of Naples and Professors Albertoni and Tizzoni of Bologna. Only four are mentioned as having retired from active practice.

New Million Dollar Hospital.—At Newcastle, England, Mr. John Hall has donated $500,000 to rebuild the Royal Infirmary and Mr. R. Lord, an ex-mayor of that city has been able to double the sum by his energy as a collector in the name of charity and of the Queen's diamond jubilee. The *Lancet* says of this generous hospital donation, that it is the greatest that has been made in the jubilee year outside of London. As the generous donor, Mr. Hall, has accompanied his gift with no onerous restrictions the governors of the infirmary are in a position to immediately accept it, and to soon give to Newcastle a modernized and magnificent structure.

A Worthy Medical Appointment in New York.—We take pleasure in noting the appointment of the veteran sanitarian, Dr. Stephen Smith, by Mayor Strong of New York City, to become a member of the important board of commissioners of charities and corrections, in succession of Mr. Silas Croft who recently was appointed to the surveyorship of the port of New York by President McKinley. This appointment of Dr. Smith is spoken of by the local press as being one of the best acts of the reform mayor, and this reason is given by one of the papers, namely, that Dr. Smith's services will be of especial value in helping the board to properly construct the buildings that have become necessary, and have been ordered to be built to relieve the enormous pressure that exists in nearly all the charitable and correctional institutions of the city

Maproni's method of enterostomy and enterorrhaphy as described in the *Gaz. degli Osp. e delle Clin.* of July 18 consists of an invagination of the intestines after the two stumps have been sutured together with a Czerny-Lembert suture. The inferior section is slipped into the superior for 5 or 10 mm., bringing the surfaces of the mucous membranes into contact, as also the serous. The triple thickness is then sutured through the two outside layers and partially through the inner, with double threads, each stitch 2 to 4 mm. long. A second row of stitches is taken parallel to the first, passing through the first two strata of the inferior portion of the intestine. The ends of the threads of the superior row of stitches are then tied two by two with the threads from the second row, which must be very close to the fold to prevent tearing out. This method is adapted to all cases of transverse section of the intestines and combines the advantages of the Murphy button and the Wölfler method, according to the inventor, who is surgeon to the Milan *Poliambulanza.*

The International Scientific Language.—Professor Sklifassowski proposed at the Moscow Congress the appointment of a committee of two delegates from each nationality represented, to decide the question of an international language, as the variety spoken is one of the chief drawbacks to international congresses. German preponderated at Moscow; even the delegate from Japan spoke in German when he expressed the hope that his country would be selected by the Congress for some future meeting. The number of important German universities in Germany, Austria and Switzerland must be borne in mind, as there is nominally only one French university. Even the *Progrès Médical* admits that more than one language is necessary, remarking that those who are unable to comprehend a paper or take part in a discussion in any one of the three principal languages on a technical subject with which they are perfectly familiar, had better stay at home.

Electrotherapeutics.—Recent communications emphasizing the importance of electricity in comparatively new fields are by Nedorodoff, in the treatment of extrauterine pregnancies, particularly when not over three months—"the only treatment when there are complications of hematosalpingitis or old periuterine hematoceles." Civera Lalse, in regard to treatment of diseases of the spine concludes: "Recovery can be obtained with it almost always when there is no osseous deformation, and when there is, electric treatment is a palliative of the greatest value" (Moscow Congress). Professor d'Arsonval's apparatus for "high frequency" and "undulatory" currents are recommended in high terms from several quarters. Apostoli has observed 518 patients treated, and calls the former "*the* treatment for the cell and general metabolism," while the latter is "an analgesic and congestion-relieving therapeutic measure in gynecologic cases of the highest order" (145 cases, including 108 gynecologic).—Report to Paris Acad. des Sciences, July 26.

Existence of a Nucleus in the Red Corpuscles and Anti-Coagulating Role of the Blood Plaques.—Professor Petrone of the University of Catania, Italy, has established the fact of the existence of the blood plaques in the blood as a normal morphologic element with the office of inhibiting coagulation. He also announces the existence of a nucleus in the adult red corpuscle in the blood of the higher mammals. His numerous experiments and tests, mostly with Lugol's solution, are described fully in the *Gaz. d. Osp. e d. Clin.* of July 25. The results authorize him to conclude that the fibrin ferment is not derived from the leucocytes, which are not a morphologic element proper of the blood, but from the red corpuscles. As they are destroyed this fibrin ferment, the so-called zymogen is liberated. The phenomena of coagulation therefore depend upon the action of the contained hemoglobin, the fibrin ferment on the fibrinogen while the blood plaques contain the coagulation-inhibiting substance.

Civilization and Syphilization explain the etiology of the present alarming increase in the cases of general paralysis, Krafft-Ebing asserted in the conclusion to his masterly presentation of progressive paralysis at the second general session of the Moscow Congress. While neurasthenia and progressive paralysis were scarcely known by name a hundred years ago, and until recently the average age was 40 years, now it is frequent

and is observed even in the young. The increasing difficulty of the struggle for existence makes ruinous demands on the brain and general system, and stimulation is sought in excessive use of coffee, tea, alcohol, tobacco and excitements. The constantly greater prevalence of celibacy with the increasing difficulty of establishing a home at a suitable age, leads to the outside satisfaction of the sexual impulse, prostitution and syphilis. He considers the fact established by statistics that syphilis is the *sine qua non* of the disease, and that prophylactic measures against syphilis are the means to combat it.

The Brooklyn Maternity Institution.—At the Low Maternity of Brooklyn, in 1896, the number of patients was 109, mortality two. The school for nurses is maintained, but has not yet received an endowment of permanence. At the clinic for gynecology over two hundred new cases were treated. The interne staff, headed by Dr. MacLean, served in rotation, acting under the injunction to treat the patients with the same consideration that the latter would receive in a private house, and to "respect the feelings of modesty inherent in the sex." The writer of the report thinks that the amount of ophthalmia has been diminished by throwing over the Credé method, and says: "In the treatment of the eyes of the newly born infant we have for more than a year rejected the Credé method: the instillation of solution of nitrate of silver. Our experience since its rejection is that we have had fewer cases of ophthalmia, and those have been of less severity than we formerly had. At birth the eyes are carefully wiped out with a saturated solution of boracic acid, and this washing is repeated daily. In cases of severe ophthalmia the nitrate of silver is used occasionally, but in every case where it is used, the eyes are immediately afterward washed out with a solution of salt. Usually, a more frequent use of the solution of boracic acid, the increased secretion being removed as fast as it is poured out, is the only treatment required even in severe cases.

Increased Facilities for Laboratory Study at Jefferson Medical College.—The Board of Trustees of Jefferson Medical College has taken another forward step in adopting plans for instruction in the new laboratories of the college, and in making elaborate preparations for summer laboratory courses and for post-graduate teaching. The arrangements are that post graduate instruction in the various sub-departments of pathology shall be open to holders of medical degrees only; that undergraduate instruction shall be given between May 1 and October 1 of each year, such instruction to be credited on next year's work; and that any student or graduate of the college who may show special ability may be appointed by the professor of pathology to do prize work in the laboratories, or work which shall be honored by publication as original investigation. In this way, without at all impairing the efficiency or restricting the scope of its regular winter course, the Jefferson College establishes a complete system of summer laboratory work. The importance of this to young men, of whom there are many who wish to make the most of their time, and to equip themselves as quickly as possible for the practice of their chosen profession, is too obvious to need pointing out.

Hydrotherapy a Subject for Clinical Teaching.—The House of Parliament, Vienna, has taken up the subject of establishing a recognized educational clinic for the purpose of elucidating hydrotherapy. The proposer of the bill has so far succeeded in establishing his proposition that the representatives resolved a few months ago to appoint a special commission to inquire into the necessity and propriety of establishing such a school of education, and named Professor Albert as the chairman of the commission. The report briefly stated disapproved of any separate chair being established in the university. It discussed the various advantages and disadvantages of the treatment, stating that lectures are already given in Italian and German schools, while two of the Austrian medical faculties, Vienna and Innsbruck, provide ample instruction for the special treatment. Different doctrines of pathology and therapy are advanced in the elucidation of hydrotherapy that necessitate its connection with the present clinic. The treatment is nothing more than a special application similar to the serum treatment, electrotherapy, mechanical therapy, or massage, which might equally claim a separate chair in a university. The present schools have already sufficient assistants to teach this therapeutic method of treatment without further encumbering the chancellor of the university with new professorships.

The International Olympian Congress held at Havre in July included the delegates to the Olympian Games, representatives from educational and athletic institutions and organizations, etc. The resolutions adopted by the Congress advocated the harmonic union of gymnastics and athletic exercises as the aim of the renaissance of physical education. It considered that the development of games in educational institutions should be left to the initiative of the pupils; that the game should not be directed by the technical professors and that athletic associations should be freely organized and freely administered, under the benevolent eye of authority and the patronage of technical professors. It also advocated that the names of pupils who win distinction in both intellectual and athletic exercises should be published in the educational organs every year. Also that special cards recording the physical development should be sent to the parents twice a year. The establishment of a hydrotherapeutic service in every educational institution was demanded by the Congress and the game of tennis especially recommended for scholastic institutions. The professor of gymnastics should possess a certain knowledge of physiology, anatomy and hygiene and submit to written, oral and practical examinations before obtaining his diploma. The attention of the public authorities was called to the precarious pecuniary circumstances of most professors of gymnastics and the hope expressed of a change for the better. Further details will be found in the *Jour. d'Hygiène* of September 2.

Power of Township Trustee to Employ Physician.—A township trustee is, by Indiana law, made the overseer of the poor of his township. But the power to employ medical and surgical aid for the poor of a township or the county is vested in the board of county commissioners. Where there has been an exercise of that power, and suitable provision has been made, the appellate court of Indiana points out, in Board of Commissioners v. Galloway, June 2, 1897, it divests the township trustee of power to act, and he has no authority to employ medical aid for the poor of his township, unless the physician employed by the county abandons his contract, or refuses to perform it, or is at such a distance that his attendance can not be readily procured, or an emergency exists, or he lacks the skill and experience necessary to render reasonably efficient services in the case, and the dictates of humanity seem to require immediate action upon the part of the trustee. Even in these exceptional cases, a township trustee can only bind the county while he acts within the scope of his authority as the agent of the county. Where a trustee does not act within the scope of his statutory power, and where he has no authority to act at all, he can neither bind his township nor the county. And his agency is of such a character that the court holds all are bound to take notice of its scope and limitations.

Internal Causes of the Putrefaction of Cadavers (Med.-Leg. Congress.)—In case of a healthy person dying suddenly, microbes are only found on the surface of the body and in the large cavities communicating with the outer air, especially the alimentary canal, but in case of a diseased person the microbes may have already invaded the organs at the moment of death. In infective diseases such as cholera, putrefaction commences during life; the emigration of the microbes into the organs may also have been started by intoxication from alcohol, arsenic,

etc. Bacteriology has furnished an explanation of the fact that an infant born dead putrefies like a piece of meat, while if the infant has lived a few hours the putrefactive processes start in the intestines. At birth the intestine is completely sterile, and it is possible by means of bacteriologic cultures to determine in certain cases by analyzing the intestinal flora, whether the corpse is that of a still-born infant or whether it had lived a few hours (from Malvoz' address). Descoust added that examination of the eyes showed that the cornea loses its transparency by the end of twenty-four hours, when important changes commence in the media of the eye. First they become turbid and then they ferment, when the eye protrudes from between the lids. It is at commencement of this period that the green spot appears in the right iliac fossa. Later the cornea is luxated by the progress of the putrefaction or there is a kind of resorption of the media. In both cases the organ collapses whether the humors have escaped or been absorbed. By this time it is the twentieth or twenty-second day in winter; the fifth or sixth in summer.—*Presse Med.*, August 25.

Bacteriology at the University of Virginia.—At the above-named university bacteriology is taught by lectures accompanied by practical work in the laboratory. The instruction given at the university in this subject differs from that given in most schools of medicine in several important respects. It is very commonly the case that the student is brought almost at the very outset into relation with the bacteria of disease, the whole or the larger part of the course of instruction being given to their specific study, the technique involved in their culture and determination and the specific products of their activity. These are all matters of the highest importance and should by no means be neglected, but exact and extensive knowledge of them may be and too often is associated with ignorance of the real nature and affinities of the bacteria, the general principles of vegetable physiology of which their characteristic activities constitute a special case, and of the essential conditions on which their culture depends. Believing that the educated physician should as far as possible know the scientific principles on which his professional knowledge rests, provision has been made for a short course which deals with the bacteria from the botanic standpoint, discussing the general morphology and physiology of plants to an extent sufficient to give the student an intelligent idea of the place of these organisms in the vegetable kingdom and of the relation of their life to that of other plants. This knowledge is made the basis of the farther discussion of their economic relations, their action as causes of disease and the methods resorted to for their manipulations, the most important processes of bactericultural technique being as far as possible fully illustrated and demonstrated in the laboratory.

Dr. Fuller, New England's First Physician.—Dr. E. E. Cornwall of Brooklyn contributed to the *New England Magazine*, February, a medico-historic essay calling attention to the causes of the high mortality among the early settlers of Plymouth Bay. He states that there was an infectious element early at work as a destroyer of life, namely, that of pulmonary tuberculosis in the acute form of so-called "galloping consumption." This infection occurred among the Pilgrims in a degree almost epidemic, being conveyed "right and left" from one to another. Dr. Fuller was the first physician in New England, and a worthy representative of the medical profession. He lived in an age when medical science was in a very imperfect state, and the few glimpses we get of his methods of treatment do not indicate that he was at all in advance of his age, but he did the best he was able to do with the light he had, and died doing his duty in an epidemic. In personal character he stood very high. He was one of the pillars of the Pilgrim society. In 1633 an "infectious fevoure," thought by many to have been typhus fever, was brought to Plymouth, and twenty of the settlers there died of it, including three of the "Fathers," Peter Brown, Francis Eaton and Dr. Samuel Fuller. During the next thirty years eighteen more passed away, in the cases of only two of whom, Miles Standish and Edward Winslow, do we know the cause of death. The former died from vesical calculus and the latter of a fever, probably malarial, which he contracted in the West Indies. It was not till the end of the century, almost fourscore years after the landing on Plymouth Rock, that the last survivor, Mary Allerton, died at the age of 90.

Rules as to Skill and Pay Laid Down in Malpractice Case.—The correct rule, the supreme court of Iowa maintains, in the malpractice case of Whitesell v. Hill, is that a physician and surgeon when employed in his professional capacity is required to exercise that degree of knowledge, skill and care which physicians and surgeons practicing in similar localities ordinarily possess. It however does not consider that any harm was done in this instance by charging the jury that as some authorities hold, the degree of proficiency, skill and care required was that ordinarily possessed by members of the profession in the vicinity where the defendant practiced, inasmuch as the evidence showed that there were several educated and experienced physicians and surgeons there. The contention, which there are also some authorities tending to support, that a valid claim for services rendered by a physician, and one for damages sustained by the patient in consequence of malpractice, can not co-exist, the court holds is not in accord with the law and practice in Iowa. It says that the right of one party to a contract but partly performed by him to recover the value of the services he has rendered, is subject to the right of the other party to a proper allowance for damages he may have sustained without fault on his part for the failure of the party seeking to recover to fulfill the agreement on his part. And it declares that it does not know of any sufficient reason for not applying these rules to the contract between a physician and his patient. It says that a physician may render service which in the main is all that is required of him, but he may have been negligent in some particulars to the injury of his patient, and in such a case a proper allowance for the injury should be made. Likewise, if the physician's treatment is so unskilful or negligent that the injury exceeds the value of his services, he should be permitted to show the value of the services, to reduce the amount for which he is liable. And this is true whether the action against him for malpractice is regarded as founded upon contract or tort.

Progress in the Treatment of Rinderpest.—The inoculation method of Professor Koch has advanced sufficiently in its practical testing to enable experts to begin to criticise its value and to ascertain what are its disadvantages. It appears that the use of fresh bile has not been without disaster, for some cattle inoculated by Dr. Kohlstock have shown an enormous mortality, over 80 having died out of a fine clean herd of 149 very valuable cattle. In the case of clean herds, generally speaking, fairly good results are obtained, although it is reported that no herd has yet been inoculated with bile in which rinderpest has not followed. The greatest difficulty is the fact that the bile does not keep, and that, according to Dr. Koch, only green biles can be used. But green biles are only obtained rarely, the most frequent proportion being one in seven. As only fifty animals can, on the average, be inoculated from the bile of one animal, it follows that one rinderpest animal is required even under the best conditions to inoculate seven animals. It is reported that Dr. Edington states that the addition of a certain proportion of glycerin to fresh bile succeeds in preserving it without interfering with its immunizing property. The same experimenter finds that the blood of cattle taken during the latter stages of the malady, if prevented from coagulation by citrate of potash and then

preserved by glycerin, has also very considerable immunizing power, but blood virus, like blood serum, appears to be a little uncertain in its action, and all samples do not show equal results. If the discovery of Dr. Edington is correct, that glycerin can be used, and that under such circumstances galls other than green are useful, this will probably be found the best method to adopt, provided always that the bile inoculation is followed up by virulent blood during the period that the temporary immunity holds.—*British Medical Journal.*

The Moscow Congress was one of the most important ever held on account of the scientific activity displayed (over 1,000 communications were received), although it was not marked by any epoch-making discovery. The attendance was fully 10,000 including the ladies and children. A Russian exchange mentions with interest a family from New York in which the father, mother, two sons, daughter and son-in-law, were all physicians and inscribed members of the Congress. The weather was extremely warm all the while. All speak of the cordial hospitality of the Russians with enthusiastic gratitude. Paris was selected as the seat of the next Congress, in 1900, with Professor Lannelongue, President, and Chauffard, General Secretary. The triennial international prize of 5,000 francs founded by the city of Moscow, to be awarded at each International Medical Congress, as already mentioned in the JOURNAL, page 298, was presented to Henry Dunant, the founder of the Red Cross, who has spent his life and his fortune in the relief of suffering humanity. He is also suggested as the possible recipient of one of the five large prizes to be awarded annually, according to the will of the Swedish dynamite multimillionaire, Alfred Nobel (*vide* JOURNAL, Vol. xxviii, page 330).

Medical Practice Among the Mongols.—According to the *Medical Press and Circular*, a very prevalent affection among the Mongols is the itch, due in a large degree to their repugnance to the washing of either their persons or garments. In their tents they live so closely together that if one of them gets the itch all soon have it. Various other skin diseases are prevalent among them. Rheumatism is often of frequent occurrence and the remedy largely used for that trouble consists of kneading or a kind of massage; they make use of a "rheumatism stick," a piece of wood so bent that any part of the body can be reached by the patients in their self-application of the kneading process. A peculiar disease called "narry," due to their indulgence in their native spirituous liquor, is frequent; the stomach becoming intolerant of food so that the patient ultimately dies of starvation. The treatment of the sick and injured rests chiefly with the priests or Buddhist lamas, whose system is quite elaborate, but based for the most part on superstition. Instead of paying occasional visits to the patient, their method is to reside in his house until recovery or death takes place, or the case is decided to be incurable. The people have great confidence in drugs and medical regimen, including the water-cure, the latter object causing them to resort to springs, both hot and cold, that are somewhat abundant in Mongolia and Northern China. They place implicit confidence in the medical knowledge of the foreign missionaries who visit their inhospitable country, but express wonder and astonishment when their proffered recompense is refused by the latter. For the bite of a dog they apply to the wound a portion of the fur of the animal; literally "the hair of the dog" is their remedy. They use the loadstone in powdered form as a cure for ulcers, deafness, etc. They attribute many diseases to the influence of the planets and constellations, to offenses committed and to fate. Hygiene or preventive measures do not enter much into their scheme of treatment.

Realizing Upon Life Insurance.—A legal friend of ours believes that he knows of at least one case where a well-insured man, suicidally inclined, has been able to dupe both the insurance company and the coroner's jury. This man, aged under 50 years, had been greatly worried over losses in business, and set to work in the most methodic way to take his own life in such a way that the fact of suicide might never be known. In his third attempt he succeeded in taking a lethal dose of a preparation of morphin, and so prepared the circumstantial evidence that was to come under the notice of the coroner, that the latter assented to a verdict of death by heart disease. In a previous effort he had failed to take a dose sufficiently large to cause death, but had laid his plans to a nicety for the purpose of "realizing on his life insurance" for the benefit of dear and dependent members of his family. He first set about to give himself an attack of indigestive diarrhea by making a meal of cheese, lobster, ice-cream, etc., and so far succeeded, that he had an excuse for having an antidiarrheal mixture and a strong morphin preparation in two bottles, almost identical in appearance, and kept by him side by side on his medicine shelf, his intention being to so dose himself with the latter preparation that he would be found dead in his bed in the morning, and the inquest would be led to decide that an accidental overdose was the *causa mortis*; but this attempt failed, because his dose was too small for his object. A further effort, and second failure was one in which he wilfully exposed himself to a pneumonia in midwinter weather; he first, by violent exercise get himself into profuse perspiration, and then removing all his clothing placed himself before an open window courting the icy blasts of nearly zero weather. But he could not "realize" in that manner. His third attempt succeeded, as said before, and his ante-mortem conduct and arrangements appear to have been so complete as to have side-tracked the inquest and to have humbugged the officers of the law into accepting a certificate of death from heart disease, without a verification by autopsy. It is surmised by our informant that this form of accident is not an infrequent occurrence among despondent men who have been carrying heavy life insurance. We believe that there are not a few who, at certain periods of their lives, think less of their own lives than they do of the comfort of their families, and are ready to undertake to realize on their life insurance for the benefit of the latter.

The Successful Treatment of a Wound of the Heart.—Dr. Rehn, of Frankfort, at the Congress of the German Surgical Association, held in April last, read a paper on wounds of the heart and their treatment. After pointing out that penetrating wounds of the heart are rare, and that large lesions cause immediate death while small ones may heal, he went on to state that auricular wounds are more dangerous than ventricular owing to the thinness of the auricular wall. Hemorrhage, however, is apt to be more profuse when the right ventricle is damaged, and the prognosis in any case depends practically upon the quantity of hemorrhage. The diagnosis of the site of lesion is difficult to make, but in doubtful cases cautious probing must be performed. The main indication of treatment, Dr. Rehn said, was to keep the patient as quiet as possible, but severe dyspnea generally precludes this. Venesection has been recommended to check the hemorrhage. To remove the blood from the pericardial it has been recommended to puncture the pericardium; but as there is risk of inflicting a new lesion it is better to make a long incision and discover the seat of the lesion. Italian surgeons were the first to suggest sutures in these cases, and Professor Rehn has lately been so fortunate as to meet with a case of wound of the heart where by suturing he was able to save his patient. A young man was brought to hospital, having received an injury from a knife in the left side of the chest. There was much dyspnea and hemorrhage. As the pericardium became diluted the patient's state became worse and worse. The wound in the fourth intercostal space was then opened up, and after resection of the fifth rib the pericardium was incised. A wound one and a half centimeters in length was then found in the right ventricle. This Dr. Rehn closed by three sutures and packed the pericardial cavity with iodoform gauze. After the operation the pulse and respiration immediately improved, and although the patient's convalescence was retarded by suppurative pleuritis he made in the end a complete recovery.

Detroit.

THE WAYNE COUNTY MEDICAL SOCIETY held a very interesting meeting Thursday evening, September 23. The paper of the evening was on the subject of "Croup," read by Dr. B. R. Shurly, dealing particularly with diphtheric croup both as a primary disease and as secondary to involvement of the pharynx. He laid down the principle that all cases of croup in which there is a gradual increase in the dyspnea with cyanosis, etc., diagnosis of diphtheria should be made, so that the physician and patient may be on the safe side; and all children between the ages of 1 and 6 years in the same household should be immunized. The treatment in these cases is antitoxin combined with intubation. In the old treatment of these cases combined with intubation, the death rate is about $66\frac{2}{3}$ per cent.; with the antitoxin and intubation method the death rate has been reduced to $33\frac{1}{3}$ per cent., and in his own cases to 28 per cent. Out of ninety cases treated by him with intubation there were twenty-six deaths. In the discussion the President brought up the question of paralysis following diphtheria, and stated that it was remarkable how often cases of true diphtheric laryngeal inflammation had been overlooked as cases of diphtheria and treated for simple tonsillitis. He stated that he had frequently seen patients suffering from paralysis of accommodation of the eye, who had denied ever having diphtheria but who had admitted having had tonsillitis. In his opinion, paralysis never occurred after primary laryngeal diphtheria. In reply the author of the paper said that he believed the reason why paralysis never followed laryngeal diphtheria was because of the fact that the larynx was particularly impervious to the toxins of diphtheria, illustrated by the fact that primary laryngeal diphtheria, when not of the ascending or descending variety, does not produce septic features.

TELEPHONE COMPANIES.—Owing to the fact that there are two telephone companies in Detroit the druggists and physicians have determined to organize for the sake of minimizing the evil thus arising, and committees have been appointed from the different medical societies of Detroit and from the organized druggists to confer for the purpose of arranging some plan of action whereby the telephone nuisance may be abated.

THE HEALTH OFFICE REPORT for the week ending September 26 shows 90 deaths in the city, of which 40 were children under 5 years of age; births 86, of which 43 were males. There are at present 16 cases of diphtheria and 28 cases of scarlet fever. Three deaths were caused by diphtheria and 2 by scarlet fever.

Societies.

American Association for the Study and Cure of Inebriates.—The annual meeting will be held at New York City, October 22.

The American Public Health Association will hold its annual meeting in Philadelphia, Pa., October 26 to 29.

The Vermont State Medical Society will meet at St. Albans, Vt., October 15 and 16.

The following meetings were recently held:

District of Columbia.—National Society of Electro-Therapeutists, Washington, September 29 and 30.

Illinois.—Illinois Army and Navy Medical Association, Springfield, September 29. The following officers were elected: President, Dr. A. C. Corr, Carlinville; first vice president, Dr. P. L. Dieffenbach, Havana; second vice-president, Dr. W. O. Ensign, Rutland; third vice-president, Dr. O. B. Ormsby, Murphysboro; fourth vice-president, Dr. D. H. Law, Dixon; secretary and treasurer, Dr. E. R. Bartlett, Springfield. Chicago Medical Society, Chicago, September 29.

Maryland.—Baltimore County Medical Association, Baltimore, September 23.

Minnesota.—Ramsey County Medical Society, St. Paul, September 27.

Ohio.—Cleveland Medical Society, September 24. Mansfield Academy of Medicine, September 28.

Pennsylvania.—American Electro-Therapeutic Association, Harrisburg, September 22 and 23.

Tennessee.—Marshall County Medical Society, Lewisburg, September 21. East Tennessee Medical Society, Knoxville, September 30 and Octocer 1.

CHANGE OF ADDRESS.

Berens, Bernard, from 2002 to 2041 Chestnut St., Philadelphia, Pa.
Butler, F. A., from 210½ Clark St., to 280 State St., Chicago, Ill.
Brown, E. V. L., from Morrison, Ill., to 268 S. Wood St., Chicago, Ill.
Ewing, W. Brown, from Wernersville to Cannonsburg, Pa.
Houston, J. M., from San Francisco to Falls City, Neb.
Kaull, Wm. A., from Princeton to Ohio, Ill.
Kuhlman, C. G., from 935 Market St. to 423 Ellis St., San Francisco, Cal.
Knopf, S. A., New York, N. Y., address is 955 instead of 935 Madison Av., as published in September 25 issue.
Logan, J. E., from 306 Keith & Perry Bldg. to 1208 Wyandotte St., Kansas City, Mo.
Le Grand, J. C., from Annison to Birmingham, Ala.
McDermith, S. F., from 1702 Champa St. to 503 Mach Block, Denver, Colo.
Morrow, J. C., Scio, Ohio, to 337 Jacunda St., Pittsburg, S. S., Pa.
Moore, J. Wm., from Detroit to Atlantic Mine, Mich.
Mattison, F. C. E., from 4936 Vincennes Av. to 4458 Cottage Grove Av., Chicago, Ill.
Reed, B., from Atlantic Mine, N. J., to 4726 Kingsessing Av., Philadelphia, Pa.
Rogers, A. S., from Vassar to Ann Arbor, Mich.
Tudor, Mary S., from South Windsor, to 179 Sigourney St., Hartford, Conn.
Tombaugh, L. H., from Washington, Pa., to Three Rivers, Mich.
Van Eman, J. H., 1003 E. 14th St. to 1326 Forest Av., Kansas City, Mo.
Wagely, T. J., from Paris, France, to Cleburne, Texas.

LETTERS RECEIVED.

Bauer, L. D., Philadelphia, Pa.; Boehringer, C. F., & Soehne, New York, N. Y.; Barlow, E. B., Toledo, Ohio.
Chamberlain, G. L., Newberry, Mich.
Fleming, Ellis, Woodland, Iowa; Fisk, Samuel A., Denver, Colo.
Gaut, S. G., Kansas City, Mo.
Knopf, S. A., New York, N. Y.
Hummel, A. L., Advertising Agency, New York, N. Y.
Le Count, E. R., Chicago, Ill.
McCormick, Henry C., Williamsport, Pa.; McCorn, W. A., Kankakee, Ill.; Mathews, J. M., Louisville, Ky.
Pallak, S., St. Louis, Mo.; Peacock Chemical Co., St. Louis, Mo.
Paquin, Paul, St. Louis, Mo.; Porter, John L., Chicago, Ill.
Ridlon, John, Chicago, Ill.; Rowley, W. S., Chicago, Ill.
Sothoron, Elmer, Washington, D. C.
Vansant, E. L., Philadelphia, Pa.
Weaver, W. H., Chicago, Ill.; Williams, E. J., Windsor Mills, Quebec; Wingate, U. O. B., Milwaukee, Wis.; Walker, Jason, Minot, Me.; Williams, C. L., Conneaut Lake, Pa.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from September 25 to October 1, 1897.

First Lieut. William F. Lewis, Asst. Surgeon, the order directing him to report for duty at Ft. McPherson, Ga., is amended so as to direct him to report for duty at the new post on Sullivan's Island, S. C.

Capts. Charles Richard and George McCreery, Asst. Surgeons, ordered to report Oct. 4, 1897, to the president of the examining board appointed to meet at the Surgeon General's office, Washington, D. C., for examination for promotion.

Col. Charles R. Greenleaf, Asst. Surgeon-General, will in addition to his present duties in charge of the medical supply depot in San Francisco, Cal., take charge of the office of the chief surgeon, Dept. of California, during the absence on leave of the chief surgeon.

Capt. Robert J. Gibson, Asst. Surgeon (Ft. Thomas, Ky.), is ordered to report to the president of the examining board at Surgeon-General's office, Washington, D. C., Oct. 4, 1897, for examination for promotion.

First Lieut. Henry R. Stiles, Asst. Surgeon, Ft. Preble, Maine, ordered to report to the president of examining board at Washington, D. C., Oct. 18, 1897, for examination for promotion.

Major Charles B. Byrne, Surgeon, is relieved from duty at Ft. Snelling, Minn., and ordered to Plattsburg Bks., N. Y., for duty.

Major Philip F. Harvey, Surgeon, on being relieved from duty at Plattsburg Bks., N. Y., is ordered to Ft. Snelling, Minn., for duty.

Capt. Jefferson D. Poindexter, Asst. Surgeon, now at Willetts Point, is ordered to temporary duty as attending surgeon and examiner of recruits in New York City, relieving Capt. Charles Richard, Asst. Surgeon, who is ordered to Ft. Monroe, Va., for duty.

A board of officers to consist of Lieut.-Col. Alfred A. Woodhull, Deputy Surgeon General; Major Curtis E. Munn, Surgeon; Capt. William F. Lippitt, Jr., Asst. Surgeon, is appointed to meet at Hdqrs. Dept. of the Colorado, Denver, Colo., Monday, Oct. 18, 1897, for the examination of medical officers for promotion.

First Lieut. Harry M. Hallock, Asst. Surgeon, will report to the president of the examining board at Denver, Colo., Oct. 18, 1897, for examination for promotion.

A board of officers to consist of Col. Charles R. Greenleaf, Asst. Surgeon-General; Major Edward R. Moseley, Surgeon; Capt. Euclid B. Frick, Asst. Surgeon, is appointed to meet at Hdqrs. Dept. of California, San Francisco, Cal., on Monday, Oct 25, 1897, for examination for promotion of officers of the Medical Department.

Capt. Paul F. Straub, Asst. Surgeon (Angel Island, Cal.), ordered to report to the president of the examining board, San Francisco, Cal., Oct. 25, 1897, for examination for promotion.

A board of officers to consist of Lieut.-Col. Henry R. Tilton, Deputy Surgeon General; Capt. William C. Borden, Asst. Surgeon; Capt. Henry A. Shaw, Asst. Surgeon, is appointed to meet at Hdqrs. Dept. of Dakota, St. Paul, Minn., on Monday, Oct. 18, 1897, for examination of medical officers for promotion.

First Lieut. George J. Newgarden, Asst. Surgeon, ordered to report to the president of examining board, St. Paul, Minn., Oct. 18, 1897, for examination for promotion.